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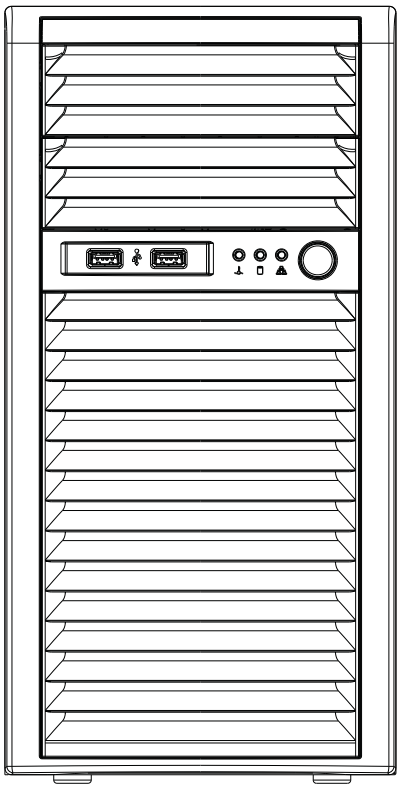
SuperServer 5036I-I/5036I-IF



USER'S MANUAL

Revision 1.0

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 5036I-I/5036I-IF. Installation and maintenance shall be performed by experienced technicians only.

The SuperServer 5036I-I/5036I-IF is a single processor system based on the SC731i-300 mini-tower chassis and the Super X8SIL/X8SIL-F motherboard.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the system and describes the main features of the Super X8SIL/X8SIL-F motherboard and the SC731i-300 chassis.

Chapter 2: Installation

This chapter describes the steps necessary to setup the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 5036I-I/5036I-IF.

Chapter 5: Advanced Motherboard Setup

Chapter 5 provides detailed information on the X8SIL/X8SIL-F motherboard, including the locations and functions of connectors, headers and jumpers. Refer

to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC731i-300 chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring Serial ATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: POST Error Beep Codes

Appendix B: Installing Windows

Appendix C: System Specifications

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Appendix A POST Error Beep Codes

Appendix B Installing Windows

Appendix C System Specifications

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Chapter 1

Introduction

1-1 Overview

The SuperServer 5036I-I/5036I-IF is a high-end server comprised of two main subsystems: the SC731i-300 mini-tower chassis and the X8SIL/X8SIL-F motherboard. Please refer to our web site for information on operating systems that have been certified for use with the SuperServer 5036I-I/5036I-IF (www.supermicro.com).

In addition to the motherboard and chassis, various hardware components have been included with the SuperServer 5036I-I/5036I-IF, as listed below:

- One cooling fan (FAN-0076L4)
- One I/O shield (MCP-260-00027-0N)
- SATA Accessories
  Four SATA cables (CBL-0044L)
- One SuperServer 5036I-I/5036I-IF User's Manual

Optional

- One active heatsink (SNK-P0046A4)
- One intake fan (FAN-0113L4)
- One DVD-ROM drive (DVM-LITE-DVDRW-HBT or DVM-LITE-DVD-HBT)

1-2 Motherboard Features

At the heart of the SuperServer 5036I-I/5036I-IF lies the X8SIL/X8SIL-F, a single processor motherboard based on the Intel® 3400 (X8SIL) and Intel 3420 (X8SIL-F) chipsets. Below are the main features of the X8SIL/X8SIL-F. (See Figure 1-1 for a block diagram of the chipset).

Processors

The X8SIL/X8SIL-F supports a single Intel® 3400 series processor in an LGA1156 socket. Please refer to the motherboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The X8SIL/X8SIL-F has four DIMM slots that can support up to 16 GB of UDIMM (unbuffered DIMMs) or up to 32 GB or RDIMM (registered DIMMs) DDR3-1333-/1066/800 memory. Dual-channel configurations are supported. Memory modules of the same size and speed should be used. See Chapter 5 for details.

Serial ATA

A SATA controller is integrated into the chipset to provide a 3 Gb/s Serial ATA subsystem, which is RAID 0, 1, 10 and (Windows only) 5 capable. The SATA drives are hot-swappable units. The X8SIL has four SATA ports while the X8SIL-F has six SATA ports.

PCI Expansion Slots

The X8SIL/X8SIL-F has two PCI-Express 2.0 x8 slots, one PCI-Express 2.0 x4 (in a x8 slot) and one 32-bit PCI 33 MHz slot.

I/O Ports

The color-coded I/O ports include a COM port, two USB 2.0 ports, PS/2 mouse and keyboard ports and two Gb Ethernet ports. An IPMI LAN port is also included on the X8SIL-F.

Other Features

Other onboard features that promote system health include onboard voltage monitors, a chassis intrusion header, 3-phase switching voltage regulators, chassis and CPU overheat sensors, Thermal Monitor 2 (TM2) support and a BIOS flash upgrade utility.

1-3 Chassis Features

The SC731i-300 is a mini-tower chassis with a unique design that allows most configurations to be performed without the need for tools The following is a general outline of the main features of the SC731i-300 chassis.

System Power

The SC731i-300 features a high-efficiency 300W power supply. Power must be removed from the system before servicing or replacing the power supply.

SATA Subsystem

The chassis was designed to support four SATA hard drives.

Front Control Panel

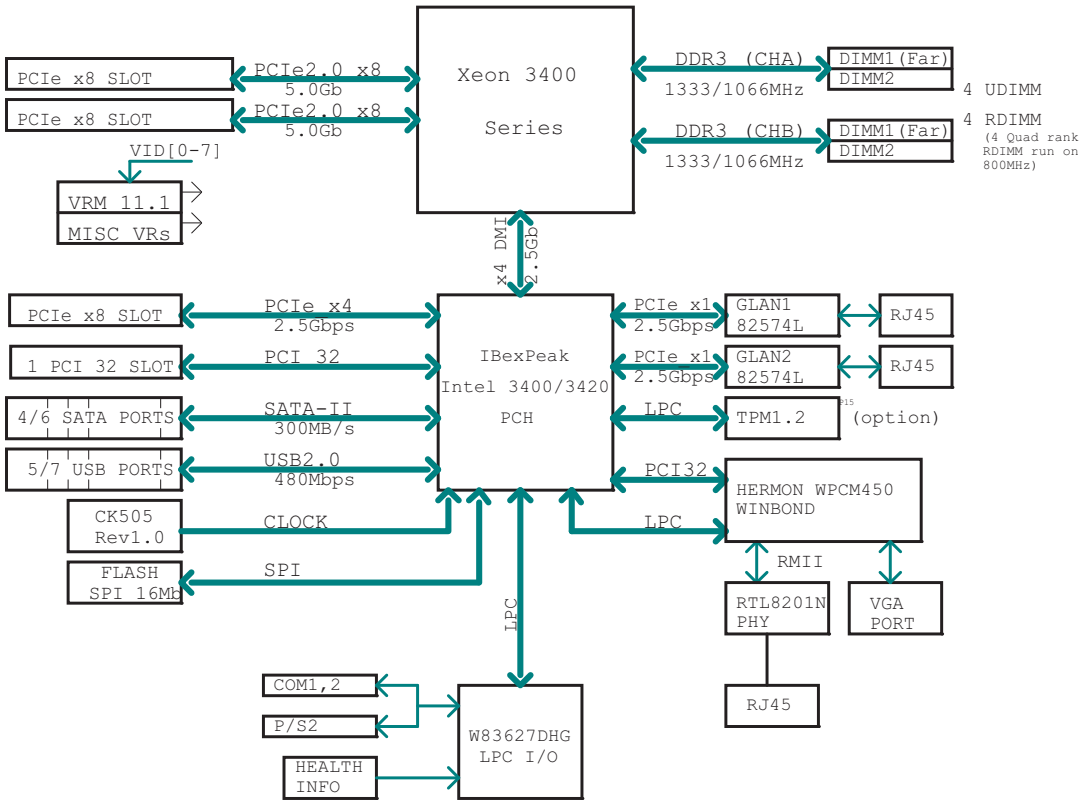
The control panel provides you with system monitoring and control. LEDs indicate network activity, hard disk drive activity and overheat conditions. The control panel also includes a main power button, which has a blue LED that illuminates when the system is powered on.

Cooling System

The SC731i-300 chassis includes one whisper-quiet 9-cm exhaust fan located at the rear of the chassis and an 8-cm fan located in the power supply. Both fans operate continuously.

Figure 1-1. Intel 3400/3420 Chipset: System Block Diagram

Note: This is a general block diagram. Please see Chapter 5 for details.



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Notes

Chapter 2

System Setup

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 5036I-I/5036I-IF up and running. Following the steps in the order given should enable you to have the system operational within a minimal amount of time. If your system is not already fully integrated with a motherboard, processor, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the SuperServer 5036I-I/5036I-IF was shipped in and note if it was damaged in any way. If the server itself shows damage, you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for setting up and operating the SuperServer 5036I-I/5036I-IF. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet.

Warnings and Precautions!

- Review the electrical and general safety precautions in Chapter 4.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the power supply units and Serial ATA drives to cool before touching them.
- To maintain proper cooling, always keep all chassis panels closed when not being serviced.

2-3 Setting Up the System

You should first open the left side panel (when facing the front of the chassis) to make sure the motherboard is properly installed and all connections have been made.

Warning: Only qualified service technicians should access the inside of the system. Except for short periods of time, do NOT operate the system without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

Checking the Motherboard Setup

1. Accessing the inside of the system (Figure 2-1): Begin by disconnecting the chassis from any power source. Grasp the cover handle (A) with your fingers. Use your thumb to lift the cover latch (B). Slide the cover back, toward the rear of the chassis, then lift the cover off.

2. Check the CPU (processor): You may have a processor already installed into the system board. The processor should have its own heatsink attached. See Chapter 5 for instructions on processor installation.

3. Check the system memory: Your system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

4. Installing add-on cards: If desired, you can install up to six add-on cards to the system. See Chapter 5 for details on installing PCI- add-on cards.

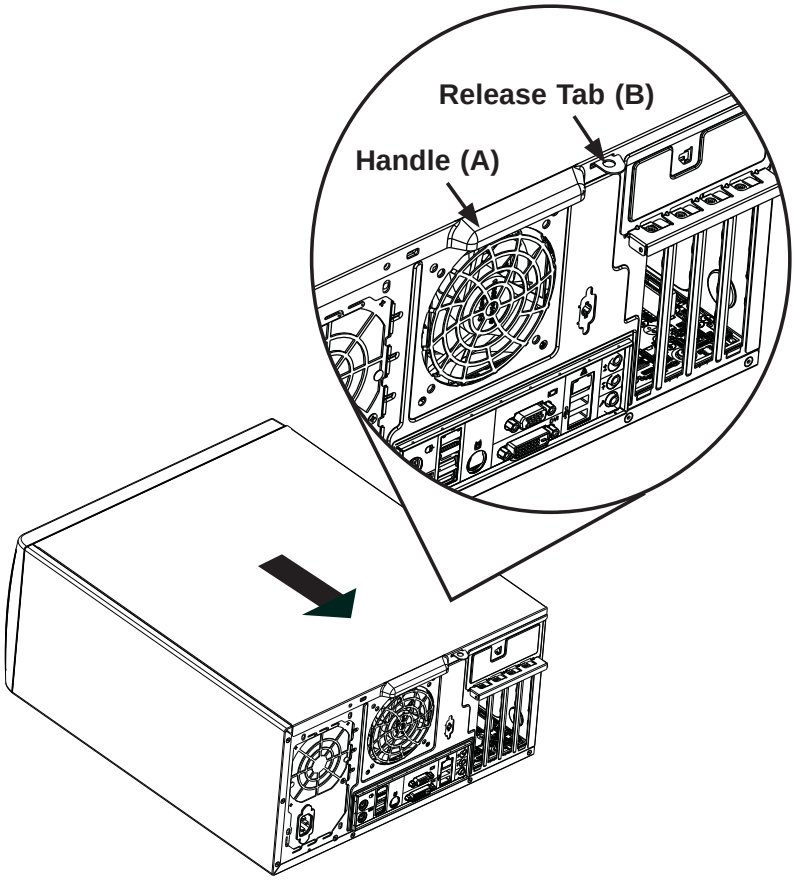
5. Check all cable connections and airflow: Make sure all power and data cables are properly connected and not blocking the airflow. See Chapter 5 for details on cable connections.

Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SATA drives have been properly installed and all essential connections have been made.

1. Accessing the peripheral drive bays: To install a component to either of the two 5.25" drive bays, you will need to remove the side chassis cover. See the installation and removal sections for the peripheral drives in Chapter 6.

Figure 2-1. Accessing the Inside of the System



2. Check the SATA disk drives: Depending upon your system's configuration, your system may have up to four SATA drives already installed. If you need to install or remove an SATA drive, please refer to the appropriate section in Chapter 6.

3. Check the airflow: Cooling air is provided by the chassis fan and the power supply fan. The system component layout was carefully designed to promote sufficient airflow throughout the chassis. Also note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fan. Please keep this in mind when rerouting or adding/removing cables.

4. Supplying power to the system: The last thing you must do is to provide input power to the system. Plug the power cord from the power supply unit into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).

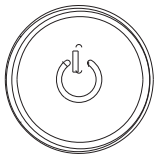
Chapter 3

System Interface

3-1 Overview

There are four LEDs on the control panel to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. The control panel also is where to find the main power on/off button.

3-2 Control Panel Button



Power

The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug system before servicing.

3-3 Control Panel LEDs

The control panel located on the front of the SC731i-300B chassis has four LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

HDD

This LED indicates SATA drive and/or DVD-ROM drive activity when flashing.

NIC

Indicates network activity on a Gigabit LAN port when flashing.

Overheat/Fan Fail

When this LED flashes it indicates a fan failure. When on continuously (on and not flashing) it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the overheat condition exists.

Power On

A blue LED located behind the main power button is illuminated when the system is powered on and running.

3-4 SATA Drive Carrier LEDs

- **Green:** Each SATA drive carrier has a green LED. When illuminated, this green LED (on the front of the SATA drive carrier) indicates drive activity. A connection to the SATA backplane enables this LED to blink on and off when that particular drive is being accessed. Please refer to Chapter 6 for instructions on replacing failed SATA drives.

- **Red:** The red LED to indicate an SATA drive failure. If one of the SATA drives fail, you should be notified by your system management software. Please refer to Chapter 6 for instructions on replacing failed SATA drives.

Chapter 4

System Safety

4-1 Electrical Safety Precautions

Note: power should always be disconnected before performing any service on the system.

Basic electrical safety precautions shall be followed to protect yourself from harm and the SuperServer 5036I-I/5036I-IF from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and floppy drive. When disconnecting power, you should first power down the system with the operating system first and then unplug the power cords of all the power supply units in the system.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

- This product may be connected to an IT power system. In all cases, make sure that the unit is also reliably connected to Earth (ground).

- Serverboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- DVD-ROM Laser: **CAUTION** - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the SuperServer 5036I-I/5036I-IF clean and free of clutter.

- The SuperServer 5036I-I/5036I-IF weighs approximately 43 lbs. (19.5 kg) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4-3 ESD Precautions

Electrostatic Discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.

- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

- Touch a grounded metal object before removing the board from the antistatic bag.

- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

- When handling chips or modules, avoid touching their pins.

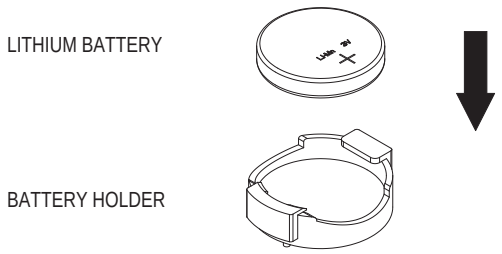
- Put the serverboard and peripherals back into their antistatic bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 5036I-I/5036I-IF is operating to assure proper cooling. Out of warranty damage to the system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard Battery



Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to install the X8SIL/X8SIL-F motherboard into the chassis, connect the data and power cables and install add-on cards. All jumpers and connections are described and a layout and quick reference chart are included for your reference. Remember to completely close the chassis when you have finished working with the motherboard to better cool and protect the system.

5-1 Handling the Motherboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the motherboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging to avoid electrical static discharge. When unpacking the board, make sure the person handling it is static protected.

5-2 Motherboard Installation

This section explains the first step of physically mounting the X8SIL/X8SIL-F into the SC731i-300 chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the motherboard, follow the procedure in reverse order.

Installing to the Chassis

1. Access the inside of the system (see procedure in Chapter 6).

2. Make sure that the I/O ports on the motherboard align properly with their respective holes in the I/O shield at the back of the chassis.

3. Carefully mount the motherboard to the motherboard tray by aligning the board holes with the raised metal standoffs that are visible in the chassis. You may need to add an extra standoff for the hole near the Fan 3 header.

4. Insert screws into all the mounting holes on your motherboard that line up with the standoffs and tighten until snug (if you screw them in too tight, you might strip the threads).

5. Finish by replacing the top cover of the chassis.

Note: Metal screws provide an electrical contact to the serverboard ground to provide a continuous ground for the system.

Warning: To avoid damaging the serverboard and its components, do not apply any force greater than 8 lbs. per square inch when installing a screw into a mounting hole.

5-3 Connecting Cables

Now that the motherboard is installed, the next step is to connect the cables to the board. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data

cables (with their locations noted) should be connected. (See the layout on page 5-9 for connector locations.)

- SATA drive data cable (I-SATA0 ~ I-SATA3)
- Control Panel cable (JF1)

Important! Make sure the the cables do not come into contact with the fans.

Connecting Power Cables

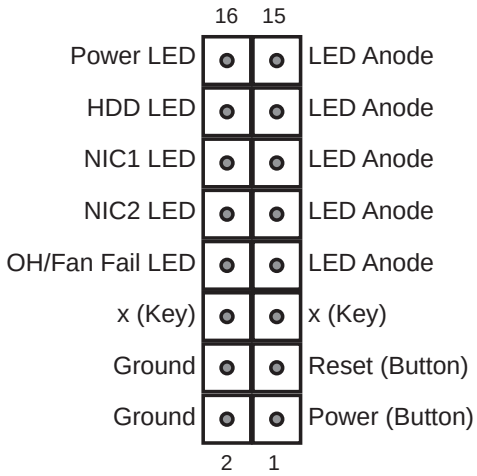
The X8SIL/X8SIL-F has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. In addition, an 8-pin processor power connector (JPW2) must also be connected to your power supply. See Section 5-9 for power connector pin definitions.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators.

All JF1 wires have been bundled into a single ribbon cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel PCB board, located just behind the system status LEDs on the chassis. See Chapter 5 for details and pin descriptions.

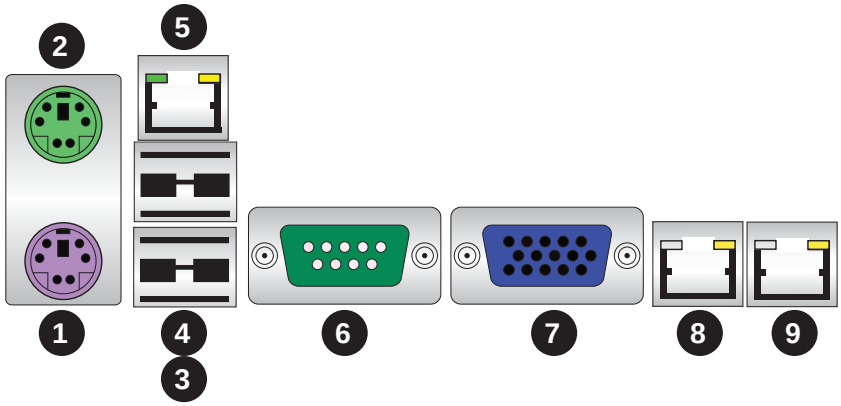
Figure 5-1. Control Panel Header Pins



5-4 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-2 below for the colors and locations of the various I/O ports.

Figure 5-2. I/O Ports



1. Keyboard (Purple)	6. COM1 Port
2. PS/2 Mouse (Green)	7. VGA Port (Blue)
3. USB Port 0	8. LAN1
4. USB Port 1	9. LAN2
5. IPMI LAN Port*	

*X8SIL-F only

5-5 Processor and Heatsink Installation

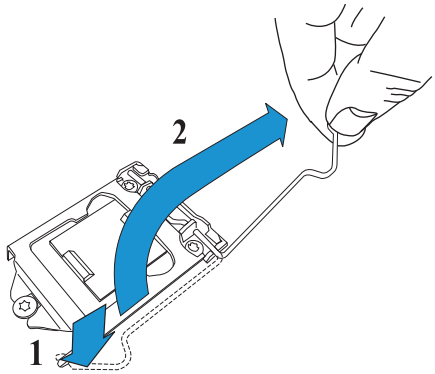
When handling the processor package, avoid placing direct pressure on the label area of the fan.

Notes:

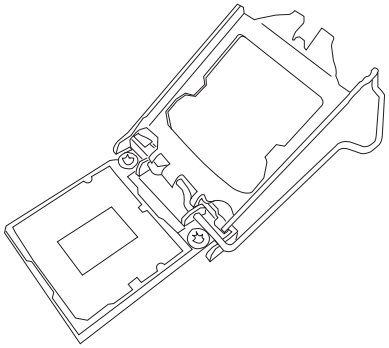
- Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure to install the serverboard into the chassis before you install the CPU heatsinks.
- When receiving a serverboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro web site for updates on CPU support.

Installing the LGA1156 Processor

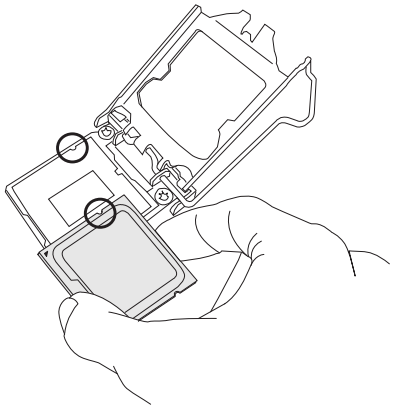
1. Press the load lever to release the load plate, which covers the CPU socket, from its locked position.



2. Gently lift the load lever to open the load plate. Remove the plate cap.



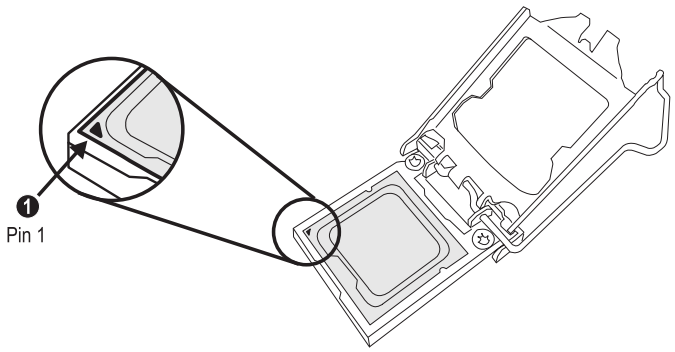
3. Use your thumb and your index finger to hold the CPU at the top center edge and the bottom center edge of the CPU.



4. Align the CPU key that is the semi-circle cutouts against the socket keys. Once aligned, carefully lower the CPU straight down to the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically.

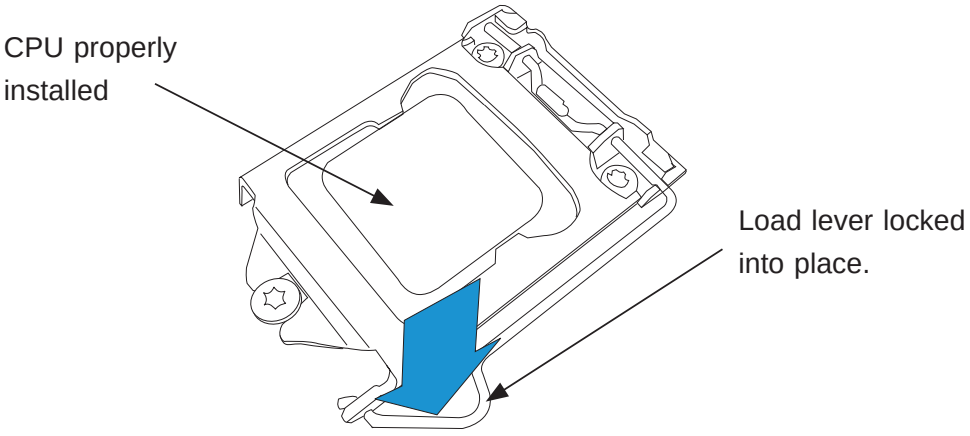
   Do not rub the CPU against the surface or against any pins of the socket to avoid damage to the CPU or the socket.)

   With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.



5. Use your thumb to gently push the load lever down to the lever lock.

   Save the plastic PnP cap. The motherboard must be shipped with the PnP cap properly installed to protect the CPU socket pins. Shipment without the PnP cap properly installed will cause damage to the socket pins.



Warning: The CPU will only seat inside the socket in one direction. Make sure it is properly inserted before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

Installing an Active CPU Heatsink

1. Locate the CPU Fan header on the motherboard. (Refer to the motherboard layout for the location.)

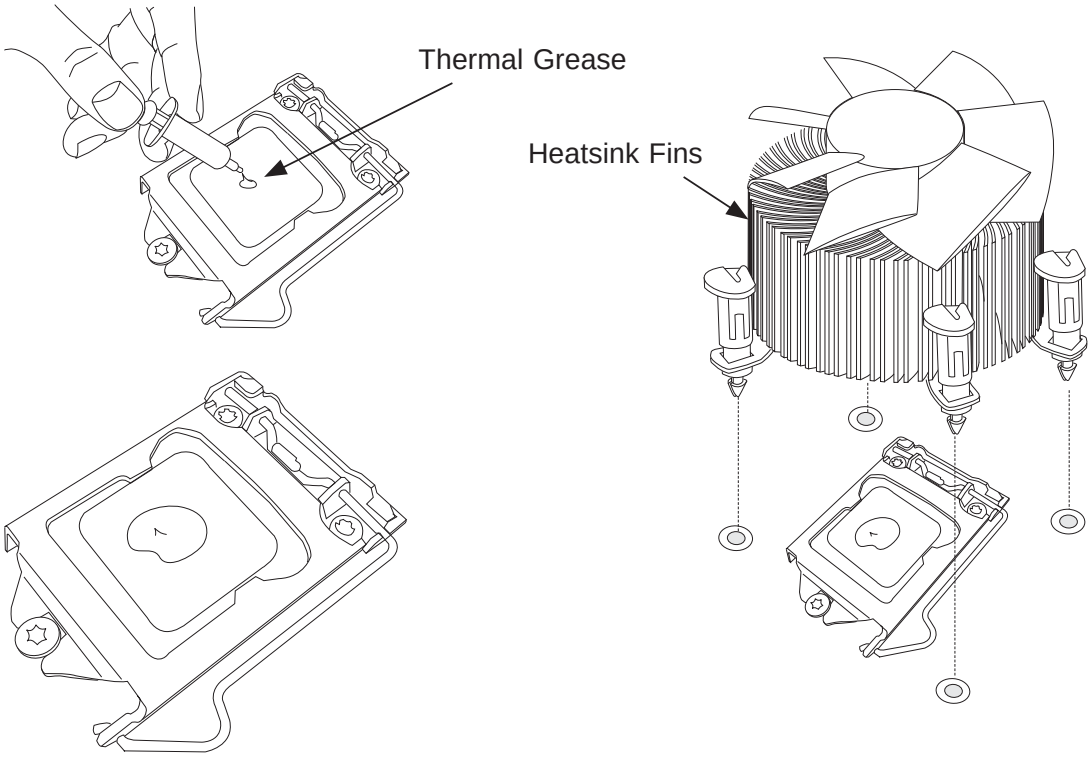
2. Position the heatsink so that the heatsink fan wires are closest to the CPU fan power connector and do not interfere with other components.

3. Inspect the CPU Fan wires to make sure that they are routed through the bottom of the heatsink.

4. Remove the thin layer of protective film from the copper core of the heatsink. **Warning:** The CPU may overheat if the protective film is not removed from the heatsink.

5. Apply the proper amount of thermal grease to the CPU. (Note: if your heatsink came with a thermal pad, please ignore this step.)

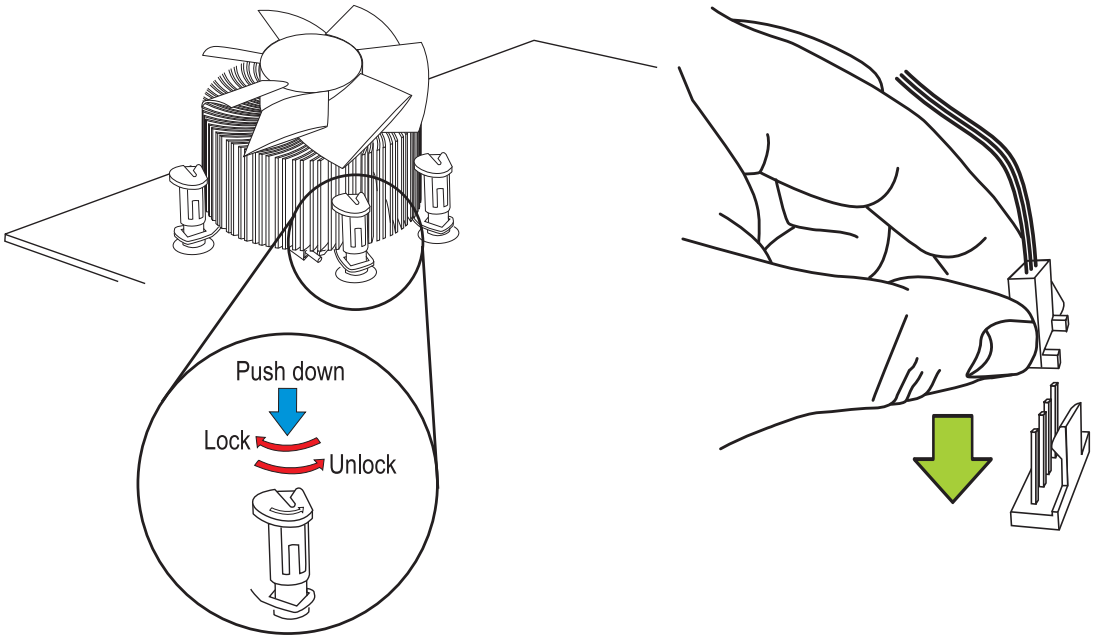
6. If necessary, rearrange the wires to make sure that they are not pinched between the heatsink and the CPU. Also make sure there is clearance between the fan wires and the heatsink fins.



7. Align the four heatsink fasteners with the mounting holes on the motherboard. Gently push the pairs of diagonal fasteners (#1 & #2, and #3 & #4) into the mounting holes until you hear a click. (Note: Make sure to orient each fastener so that the narrow end of the groove is pointing outward.)

8. Repeat Step 7 to insert all four heatsink fasteners into the mounting holes.

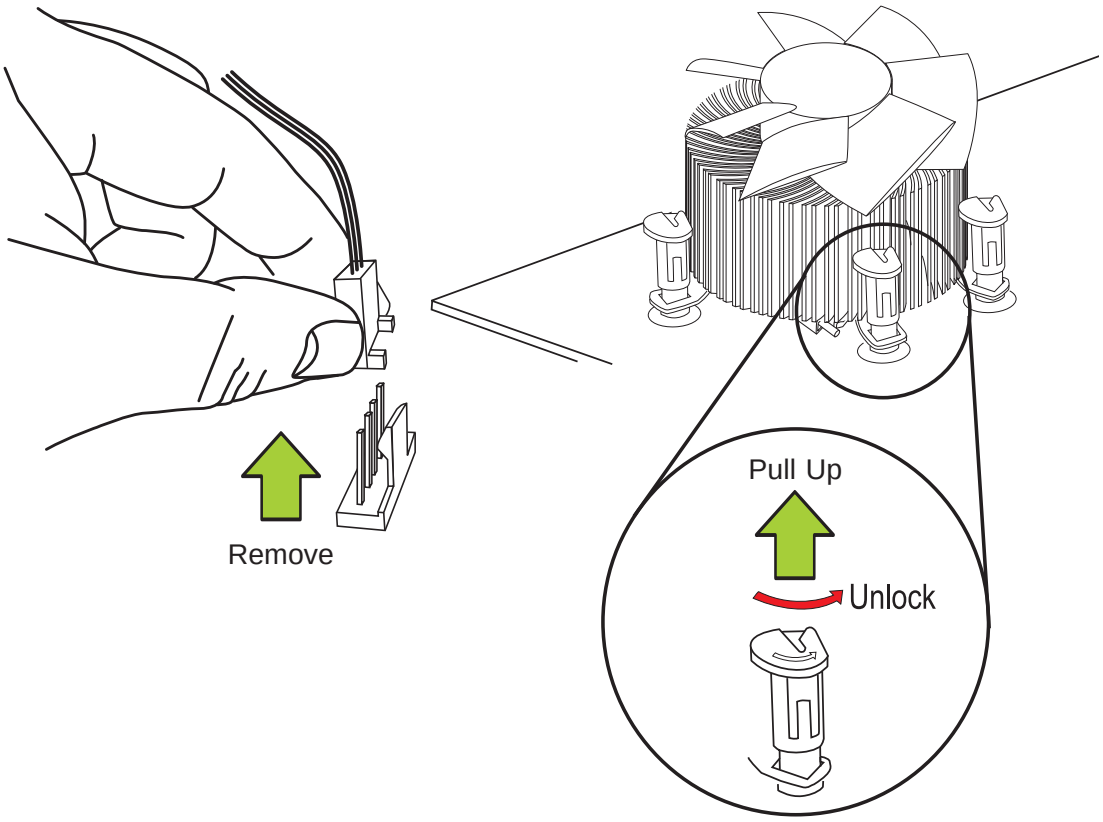
9. Once all four fasteners are securely inserted into the mounting holes and the heatsink is properly installed on the motherboard, connect the heatsink fan wires to the CPU Fan connector.



Removing the Heatsink

Warning: We do not recommend removing the CPU or the heatsink. However, if you do need to remove the heatsink, please follow the instructions below to prevent damage to the CPU or other components.

1. Unplug the power cord from the power supply.
2. Disconnect the heatsink fan wires from the CPU fan header.
3. Use your fingertips to gently press on the fastener cap and turn it counterclockwise to make a 1/4 (90^0) turn, then pull the fastener upward to loosen it.
4. Repeat Step 3 to loosen all fasteners from their mounting holes.
5. With all fasteners loosened, remove the heatsink from the CPU.



5-6 Installing Memory

Note: Check the Supermicro web site for recommended memory modules.

CAUTION

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

DIMM Installation

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM1A. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent incorrect DIMM module installation.

2. Gently press down on the DIMM module until it snaps into place in the slot. Repeat step 1 to install DIMM1B if needed.

Memory Support

The X8SIL/X8SIL-F supports up to 16GB of DDR3 ECC UDIMM or up to 32GB of ECC DDR3 RDIMM (1333/1066/800 MHz in 4 DIMM slots.) Populating these DIMM slots with a pair of memory modules of the same type and same size will result in interleaved memory, which will improve memory performance. Please refer to the table below:

Platform	DIMM Type	Intel® Xeon® Series Processors
X8SIL/X8SIL-F	Non-ECC UDIMM Only	Not Supported
	ECC UDIMM Only	Supported (see Table 1)
	RDIMM Only (with ECC)	Supported (see Table 2)
	Mixed ECC with non-ECC	Not Supported
	Mixed UDIMM/RDIMM	Not Supported

Table 1 - DDR3 ECC/Unbuffered (UDIMM) Memory Support		
ECC UDIMM	**1Gb (x8 DRAM)**	**2Gb (x8 DRAM)**
Single Rank	Up to 4GB (4 x 1GB DIMM Modules)	Up to 8GB (4 x 2GB DIMM Modules)
Dual Rank	Up to 8GB (4 x 2GB DIMM Modules)	Up to 16GB (4 x 4GB DIMM Modules)
Quad Rank	Not Supported	Not Supported

Table 2 - DDR3 ECC Registered (RDIMM) Memory Support		
RDIMM	**1Gb (x8 DRAM)**	**2Gb (x8 DRAM)**
Single Rank	Up to 4GB (4 x 1GB DIMM Modules)	Up to 8GB (4 x 2GB DIMM Modules)
Dual Rank	Up to 8GB (4 x 2GB DIMM Modules)	Up to 16GB (4 x 4GB DIMM Modules)
Quad Rank	Up to 16GB (4 x 4GB DIMM Modules)	Up to 32GB (4 x 8GB DIMM Modules)

Note: All other memory sizes, types, die, density, that are not listed in these tables are NOT supported.

Memory Population Guidelines

Please follow the tables below when populating the X8SIL/X8SIL-F.

DDR3 ECC UDIMM Memory				
DIMM Slots per Channel	**DIMMs Populated per Channel**	**DIMM Type**	**POR Speeds**	**Ranks per DIMM (any combination)**
2	1	Unbuffered DDR3 ECC	1066, 1333	Single Rank, Dual Rank
2	2	Unbuffered DDR3 ECC	1066, 1333	Single Rank, Dual Rank

DDR3 ECC RDIMM Memory				
DIMM Slots per Channel	**DIMMs Populated per Channel**	**DIMM Type**	**POR Speeds**	**Ranks per DIMM (any combination)**
2	1	Registered DDR3 ECC	1066, 1333	Single Rank, Dual Rank
2	1	Registered DDR3 ECC	1066	Quad Rank
2	2	Registered DDR3 ECC	1066, 1333	Single Rank, Dual Rank
2	2	Registered DDR3 ECC	800*	Quad Rank

*Note: 1066 RDIMMs running at 800MHz-BIOS will have their speed automatically downgraded to 800 MHz.

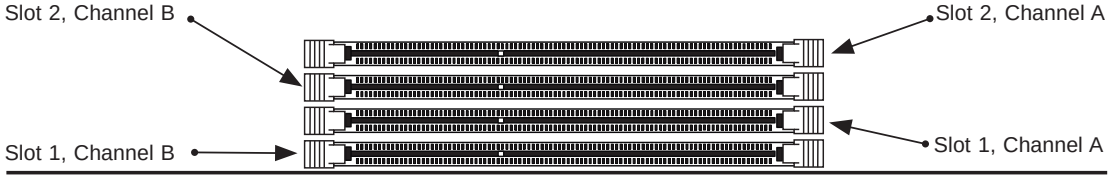
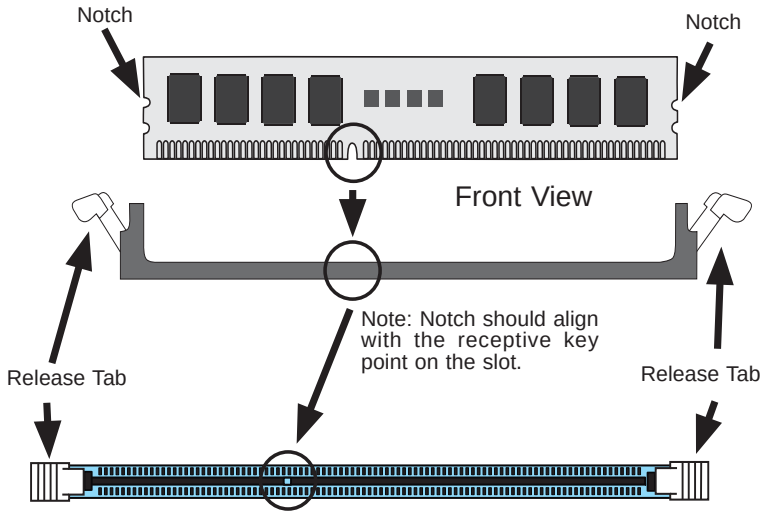


Figure 5-3. DIMM Installation

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

To Remove:
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.



Note: Due to memory allocation to system devices, the amount of memory that remains available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional.

For Microsoft Windows users: Microsoft implemented a design change in Windows XP with Service Pack 2 (SP2) and Windows Vista. This change is specific to the Physical Address Extension (PAE) mode behavior which improves driver compatibility. For more information, please read the following article at Microsoft's Knowledge Base website at: http://support.microsoft.com/kb/888137.

Possible System Memory Allocation & Availability		
System Device	**Size**	**Physical Memory Remaining (Available) (4 GB Total System Memory)**
Firmware Hub flash memory (System BIOS)	1 MB	3.99
Local APIC	4 KB	3.99
Area Reserved for the chipset	2 MB	3.99
I/O APIC (4 Kbytes)	4 KB	3.99
PCI Enumeration Area 1	256 MB	3.76
PCI Express (256 MB)	256 MB	3.51
PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary-	512 MB	3.01
VGA Memory	16 MB	2.85
TSEG	1 MB	2.84
Memory available to OS and other applications		2.84

5-7 Installing PCI Add-On Cards

The 5036I-I/5036I-IF can accommodate standard size add-on cards in all slots on the X8SIL/X8SIL-F motherboard.

Installing Add-on Cards

1. Depress the release latch (A) that holds the protective bracket (B), which secures the add-on card brackets to the chassis.

2. Lower the protective bracket from over the top of the add-on card dummy brackets as shown in the lower illustration.

3. Remove the add-on card dummy brackets from their slots.

4. Simultaneously, slide the add-on card and its bracket into the slot on the chassis, and insert the add-on card into its slot on the motherboard.

5. If desired, screws can be used to secure the add-on cards into the chassis.

6. Close the protective bracket over the tops of the add-on card brackets.

The SC731 chassis includes clips to accomodate the use of long-length add-on cards. These clips support and stabilize the long cards, preventing them from contacting any undesired surfaces.

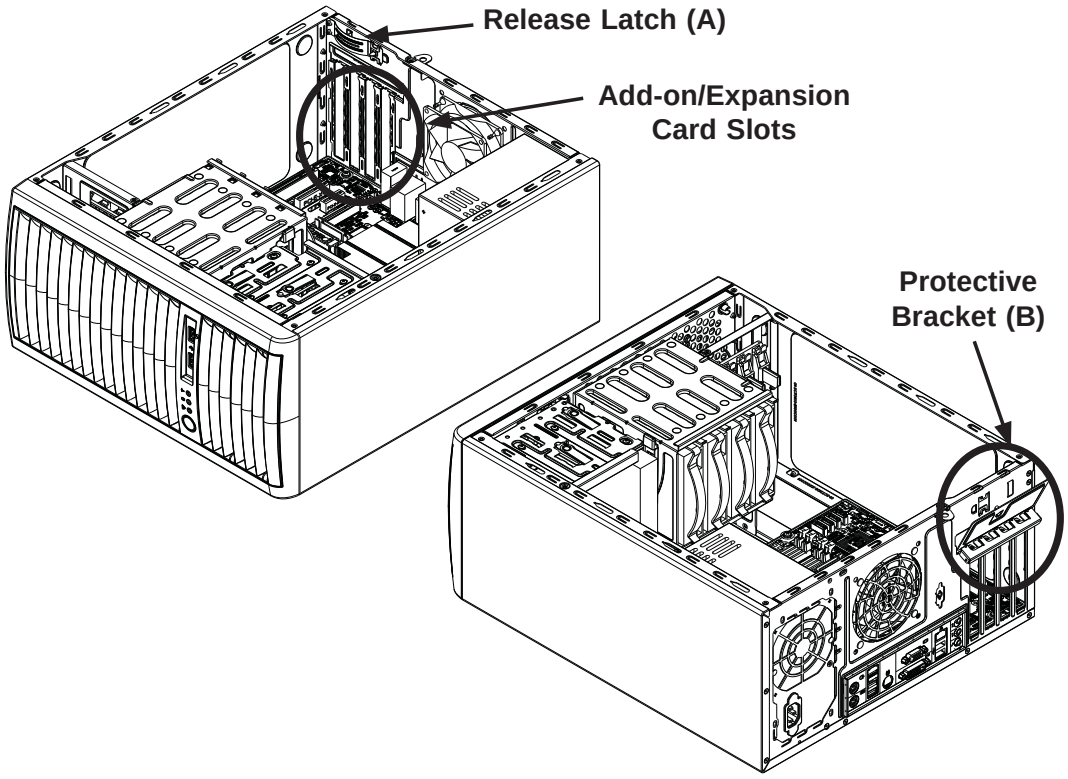
Installing Long Add-on/Expansion Cards

1. Locate the long card holders (A), on the opposite side of the chassis from the add-on card brackets.

2. Begin by installing the long card as described in the previous section.

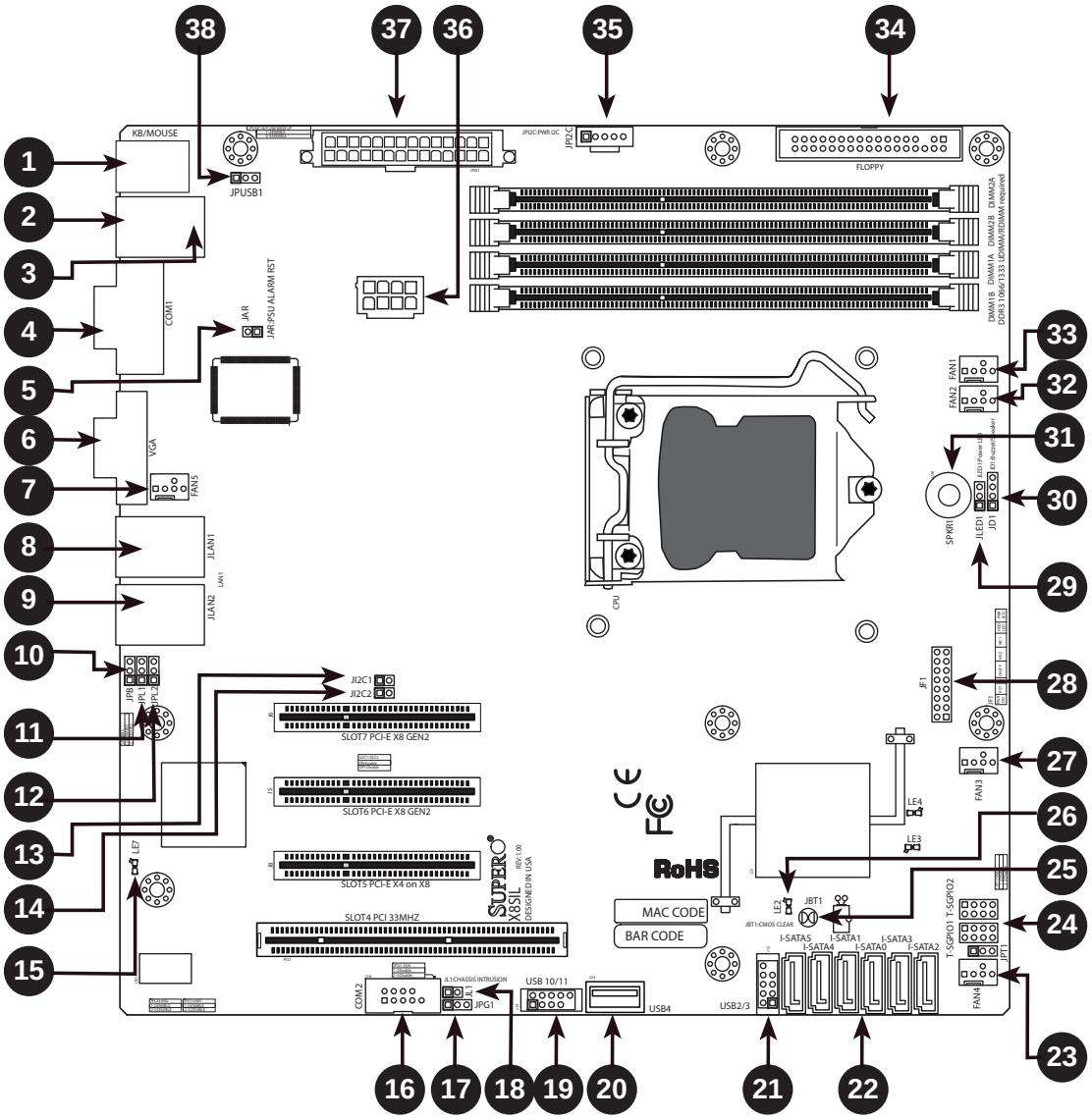
3. Push the long card holder all the way down onto the end of the card to secure it in the chassis.

Figure 5-4: Installing Add-on Cards



5-8 Motherboard Details

Figure 5-5. X8SIL/X8SIL-F Layout



X8SIL/X8SIL-F Jumpers			
Number	**Jumper**	**Description**	**Default**
38	JPUSB1	BP USB0/1 Wake-up	Pins 1-2 (Enabled)
25	JBT1	CMOS Clear	(See Section 5-9)
13,14	JI^{2}C1/JI^{2}C2	SMB to PCI Slots	(See Section 5-9)
17	JPG1	Onboard VGA Enable	Pins 1-2 (Enabled)
11,12	JPL1/JPL2	LAN1/LAN2 Enable	Pins 1-2 (Enabled)
10	JPB	BMC Jumper	Pins 1-2 (Enabled)

X8SIL/X8SIL-F Headers/Connectors		
Number	**Connector**	**Description**
4,16	COM1/COM2	COM1/2 Serial Ports
33,32,27,23,7	Fans 1~5	System/CPU Fan Headers
34	Floppy	Floppy Disk Drive Connector
5	JAR	Alarm Reset
30	JD1	Speaker Header
28	JF1	Control Panel Header
18	JL1	Chassis Intrusion Header
29	JLED	Power LED Indicator Header
37	JPW1	24-pin ATX Main Power Connector (required)
36	JPW2	+12V 8-pin CPU Power Connector (required)
1	KB/Mouse	Keyboard/Mouse Ports
8,9	LAN1~LAN2,	Gigabit Ethernet (RJ45) Ports
22	I-SATA 0~5	Serial ATA Ports (X8SIL has 4 SATA Ports)
2	IPMI	IPMI LAN Port (X8SIL-F Only)
35	JPI2C	PWR Supply (I^{2}C) System Management Bus
31	SPKR1	Onboard Speaker
24	T-SGPIO-0/1	Serial General Purpose IO Headers (for SATA)
3,21	USB0/1, USB 2/3	Rear (USB0/1) and Front Accessible (USB2/3)
20	USB 4	Type A USB Port
19	USB 10/11	Front Panel USB Header (X8SIL-F Only)
6	VGA	Onboard Video Port

	X8SIL/X8SIL-F LED Indicators			
Number	**LED**	**Description**	**Color/State**	**Status**
26	LE4	Standby PWR LED Indicator	Green: Solid on	PWR On
15	LE7	IPMI Heartbeat LED	Yellow: Blinking	IPMI: Normal

5-9 Connector Definitions

Main ATX Power Supply Connector

The primary power supply connector (JPW1) meets the SSI EPS 12V specification. Refer to the table on the right for the pin definitions of the ATX 24-pin power connector. You must also connect the 8-pin (JPW2) power connector to your power supply (see below).

ATX Power 24-pin Connector Pin Definitions (JPW1)

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

Required Connection

Processor Power Connector

JPW2 must also be connected to provide power to the South Bridge, North Bridge and all VRMs. See the table on the right for pin definitions.

8-pin (+12V) Processor Power Pin Definitions (JPW2)

Pins	Definition
1 - 4	Ground
5 - 8	+12V

Required Connection

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 7). To turn off the power in the suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

Power Button Pin Definitions (JF1)

Pin#	Definition
1	PW_ON
2	Ground

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to a hardware reset switch on the computer case to reset the system. Refer to the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)

Pin#	Definition
3	Reset
4	Ground

Overheat (OH)/Fan Fail

Connect an LED cable to pins 7 and 8 of JF1 to provide warnings for chassis overheating or fan failure. Refer to the table on the right for pin definitions.

OH/Fan Fail LED Pin Definitions (JF1)

Pin#	Definition
7	Vcc/Blue UID LED
8	OH/Fan Fail LED

OH/Fan Fail Indicator Status

State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

NIC1/NIC2 (LAN1/LAN2)

The NIC (Network Interface Controller) LED connection for LAN port 1 is located on pins 11 and 12 of JF1, and the LED connection for LAN Port 2 is on pins 9 and 10. NIC1 LED and NIC2 LED are 2-pin NIC LED headers. Attach NIC LED cables to NIC1 LED and NIC2 LED to display network activities for LAN 1 and LAN2. Refer to the table on the right for pin definitions.

LAN1/LAN2 LED Pin Definitions (JF1)

Pin#	Definition
9/11	Vcc
10/12	Ground

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. This LED is used to display HDD activity. See the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)

Pin#	Definition
13	+5V
14	HD Active

Power On LED

The Power On LED connector is located on pins 15 and 16 of JF1 This connection is used to provide LED indication of power being supplied to the system. See the table on the right for pin definitions.

Power LED Pin Definitions (JF1)

Pin#	Definition
15	+5V
16	Control

Chassis Intrusion

The Chassis Intrusion header is designated JL1. Attach an appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened

Chassis Intrusion Pin Definitions (JL1)	
Pin#	Definition
1	Intrusion Input
2	Ground

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on the I/O backpanel. The mouse port is above the keyboard port. See the table on the right for pin definitions.

PS/2 Keyboard and Mouse Port Pin Definitions	
Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Fan Headers

The X8SIL/X8SIL-F has five fan headers, all of which are 4-pin fans. However, pins 1-3 of the fan headers are backward compatible with the traditional 3-pin fans. See the table on the right for pin definitions. Fan 1 is intended for use with the CPU. A fan speed control setting in the BIOS Hardware Monitoring section allows the BIOS to automatically set fan speeds based on the system temperature. The default setting is Disabled which allows the onboard fans to run at full speed. Refer to the table on the right for pin definitions.

Fan Header Pin Definitions (FAN1-5)	
Pin#	Definition
1	Ground (Black)
2	2.5A/+16V (Red)
3	Tachometer
4	PWM Control

Note: Please use all 3-pin fans or all 4-pin fans on a motherboard. Please do not use 3-pin fans and 4-pin fans on the same board.

Onboard Speaker

The onboard speaker (SPKR1) can be used to provide audible indications for various beep codes. See the table on the right for pin definitions.

Onboard Speaker Pin Definition		
Pin#		Definitions
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker

Speaker

On the JD1 header, pins 3~4 are used for internal speaker. Close pins 3~4 with a cap to use the onboard speaker. If you wish to use an external speaker, close pins 1~4 with a cable. See the table on the right for pin definitions.

Speaker Connector Pin Definitions

Pin Setting	Definition
Pins 3~4	Internal Speaker
Pins1~4	External Speaker

Serial Ports

Two serial ports are included on the X8SIL/X8SIL-F. See the table on the right for pin definitions.

Serial Port Pin Definitions

Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

NC = No Connection

Universal Serial Bus (USB)

Two Universal Serial Bus ports (USB 0 and USB 1) are located on the I/O backplane. Additionally, a Type A USB header (USB4) and two USB connections (USB2/3 and USB 10/11, X8SIL-F only) are provided on the motherboard to provide front chassis access. (Cables are not included). See the tables on the right for pin definitions.

USB Port Pin Definitions

Pin#	Definition	Pin#	Definition
1	+5V	5	+5V
2	USB_PN1	6	USB_PN0
3	USB_PP1	7	USB_PP0
4	Ground	8	Ground

Front Panel USB Port Pin Definitions

USB 8, 9, 10		USB 11	
Pin #	Definition	Pin #	Definition
1	+5V	6	+5V
2	USB_PN2	7	USB_PN3
3	USB_PP2	8	USB_PP3
4	Ground	9	Ground
5	No Connection	10	Key

LAN1/LAN2 (Ethernet Ports)

Two Ethernet ports are located on the I/O backplane. These ports accept RJ45 type cables.

Onboard Power LED

An onboard Power LED header is located at JLED. This Power LED header is connected to Control Panel header located at JF1 to indicate the status of system power. See the table on the right for pin definitions.

Onboard PWR LED Pin Definitions

Pin#	Definition
1	VCC
2	No Connection
3	Connection to PWR LED in JF1

Power Supply I²C Connector

The Power Supply (I²C) connector is located at SMB_PS1 and is used to monitor the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

PWR Supply I²C Pin Definitions

Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground
5	3.3V

T-SGPIO 0/1 Headers

Two T-SGPIO (Serial-Link General Purpose Input/Output) headers are located near the SATA connectors on the motherboard. These headers are used to communicate with the enclosure management chip in the system. See the table on the right for pin definitions.

Serial_Link-SGPIO Pin Definitions

Pin#	Definition	Pin	Definition
1	NC	2	NC
3	Ground	4	DATA Out
5	Load	6	Ground
7	Clock	8	NC

NC = No Connection

Alarm Reset

If three power supplies are installed and Alarm Reset (JAR) is connected, the system will notify you when any of the three power modules fail. Connect JAR to a micro-switch to turn off the alarm that is activated when a power module fails. See the table on the right for pin definitions.

Alarm Reset Pin Definitions

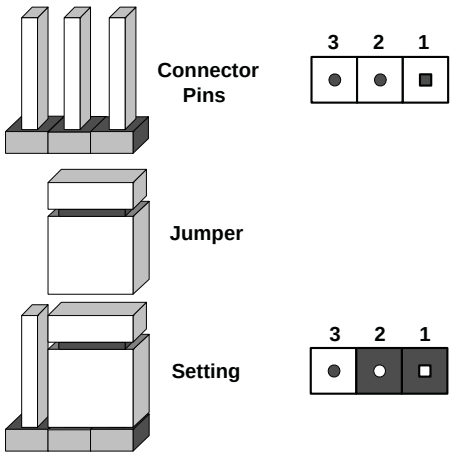
Pin Setting	Definition
Pin 1	Ground
Pin 2	+5V

5-10 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

Note: On a two-pin jumper, "Closed" means the jumper is on both pins and "Open" means the jumper is either on only one pin or completely removed.



CMOS Clear

JBT1 is used to clear CMOS (which will also clear any passwords). Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To clear CMOS,

1. First power down the system and unplug the power cord(s).
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3. Remove the screwdriver (or shorting device).
4. Reconnect the power cord(s) and power on the system.

Note: *Do not use the PW_ON connector to clear CMOS.*

VGA Enable

JPG1 allows you to enable or disable the onboard VGA connector. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings (JPG1)	
Both Jumpers	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

LAN1/LAN2 Enable/Disable

Change the setting of jumper JPL1 or JPL2 to enable or disable the LAN1 and LAN2 Ethernet ports, respectively. See the table on the right for jumper settings. The default setting is enabled.

LAN1/LAN2 Enable/Disable Jumper Settings (JPL1/JPL2)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

PCI Slot SMB Enable

Use Jumpers I^2C1/I^2C2 to enable PCI Slot SMB (System Management Bus) support to improve system management for the PCI slots. See the table on the right for jumper settings.

PCI Slot_SMB Enable Jumper Settings	
Jumper Setting	Definition
Short	Enabled
Open (Default)	Disabled

USB Wake-Up

Use the JPUSB1 jumper to "wake-up" your system by pressing a key on a USB keyboard or clicking the USB mouse. The JPUSB1 jumper is used together with the USB Wake-Up feature in the BIOS. Enable this jumper and the USB feature in the BIOS to wake-up your system via USB devices.

Note: When the USB function is set to Enabled in the BIOS, and a USB Wake-up jumper is set to Disabled, remove the USB devices from the USB ports whose USB jumper is Disabled before the system goes into the standby mode.

USB0/1 Port Wake-up Enable/Disable (JPUSB1)	
Pin#	Definition
1-2	Enabled (Default)
2-3	Disabled

BMC Jumper

JPB is used to enable or disable the BMC (Baseboard Management Control) Chip and the onboard IPMI connection. This jumper is used together with the IPMI settings in the BIOS. The default position is on pins 1 and 2 to Enable BMC. See the table on the right for jumper settings.

BMC IPMI Enable/Disable Jumper Settings	
Settings	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

5-11 Onboard Indicators

LAN1/2 LEDs

The Ethernet ports (located on the I/O backplane) have two LEDs. On each port, one LED indicates activity while the other LED may be green, amber or off to indicate the speed of the connection. See the tables on the right for more information.

LAN1/LAN2 Activity LED		
Color	Status	Definition
Yellow	Blinking	Active

LAN1/2 LED Link LED	
LED Color	Definition
Off	No Connection or 10 Mb/s
Green	100 Mb/s
Amber	1 Gb/s

IPMI Dedicated LAN LEDs

In addition to LAN1/LAN2, a dedicated IPMI LAN port is also provided on the X8SIL/X8SIL-F. The yellow LED indicates activity, while the green LED indicates the speed of the connection. See the table at right for more information.

IPMI LAN Link LED (Left) & Activity LED (Right)		
LED	Status	Definition
Link	Green: Solid	100 Mb/s
Activity	Yellow: Blinking	Active

Onboard Power LED

An Onboard Power LED is located at LE4 on the motherboard. When LE4 is on, the AC power cable is connected. Make sure to disconnect the power cable before removing or installing any component. See the table on the right for more details.

Onboard PWR LED	
LED Color	Definition
Off	System Off
On	System on, or System off and PWR Cable Connected

IPMI Heartbeat LED

An IPMI Heartbeat LED is located at LE7. When LE7 blinks, IPMI is functioning properly. Refer to the table on the right for details.

IPMI Heartbeat LED	
Green: Blinking	IPMI is ready for use

5-12 SATA and Floppy Drive Connections

SATA Ports

Six Serial ATA (SATA) ports (I-SATA 0~5) are located on the X8SIL-F motherboard (4 SATA ports on the X8SIL). These Serial Link connections provide faster data transmission than traditional Parallel ATA. See the table on the right for pin definitions.

SATA Port Pin Definitions (I-SATA0 ~ I-SATA5)

Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

Floppy Connector

The floppy connector is located next to the DIMM slots on the motherboard. See the table on the right for pin definitions.

Note the following when connecting the floppy cable:

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Floppy Drive Connector Pin Definitions (Floppy)

Pin#	Definition	Pin #	Definition
1	Ground	2	FDHDIN
3	Ground	4	Reserved
5	Key	6	FDEDIN
7	Ground	8	Index
9	Ground	10	Motor Enable
11	Ground	12	Drive Select B
13	Ground	14	Drive Select B
15	Ground	16	Motor Enable
17	Ground	18	DIR
19	Ground	20	STEP
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1 Select
33	Ground	34	Diskette

Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform simple maintenance on the SC731i-300 chassis. Following the component installation steps in the order given will eliminate most common problems. If some steps are unnecessary, skip ahead to the next step.

Tools Required

The only tool you will need is a Philips screwdriver.

6-1 Static-Sensitive Devices

Static electrical discharge can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from static discharge.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging. When unpacking the board, make sure the person handling it is static protected.

6-2 Front Control Panel

The front control panel must be connected to the JF1 connector on the motherboard to provide you with system status and alarm indications. A ribbon cable has bundled these wires together to simplify this connection. Connect the cable from JF1 on the motherboard (making sure the red wire plugs into pin 1) to the appropriate comn-nector on the front control panel PCB (printed circuit board). Pull all excess cabling over to the control panel side of the chassis.

The LEDs inform you of system status - see Figure 6-1 for details. See Chapter 5 for details on JF1.

Figure 6-1. Front Control Panel LEDs

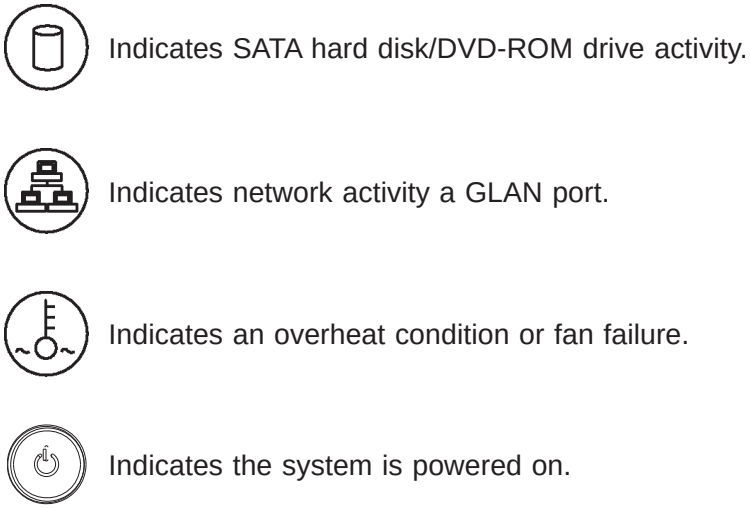
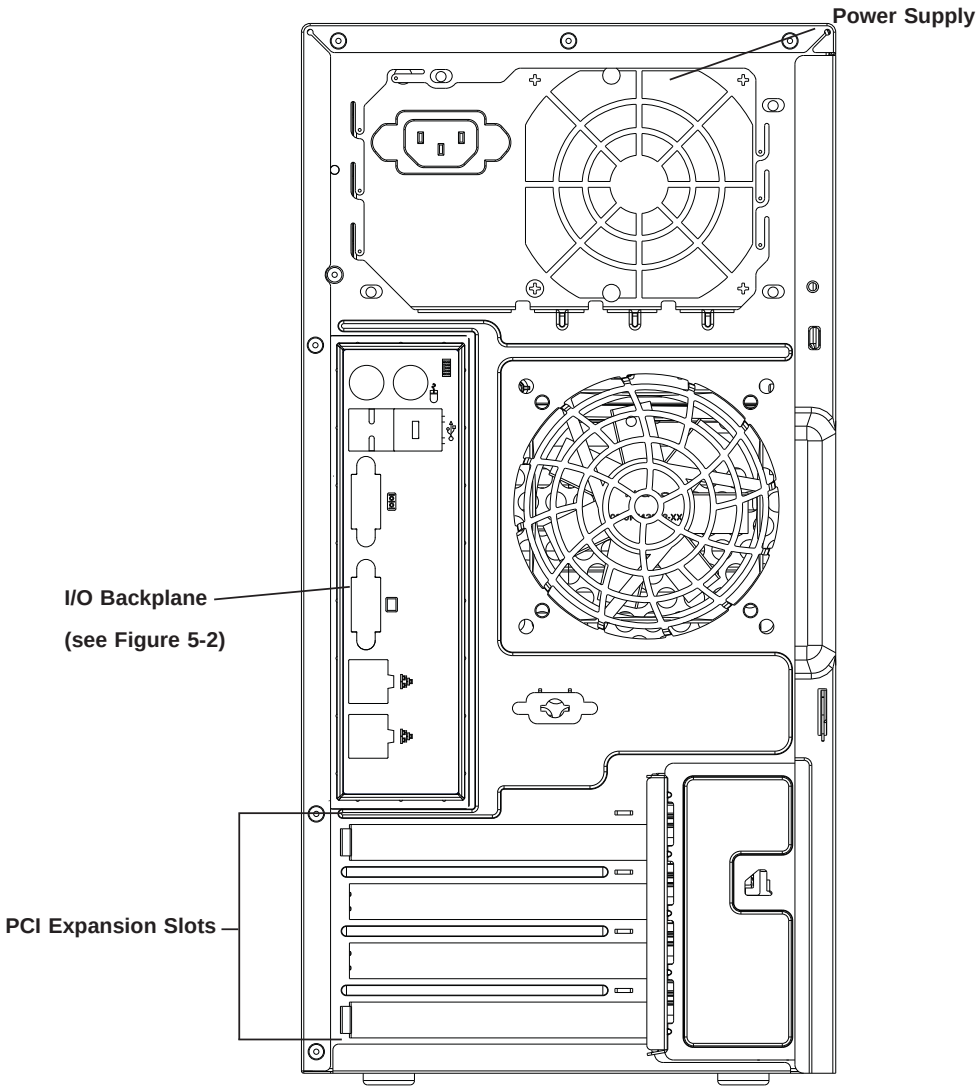


Figure 6-2. Chassis Rear View



6-3 Front Bezel

A bezel may be installed to cover the front of the chassis.

Front Bezel Installation

1. Remove the dummy cover (A) on the peripheral drive bay.

2. Push the front bezel into place on the front of the chassis to complete the installation (see Figure 6-4).

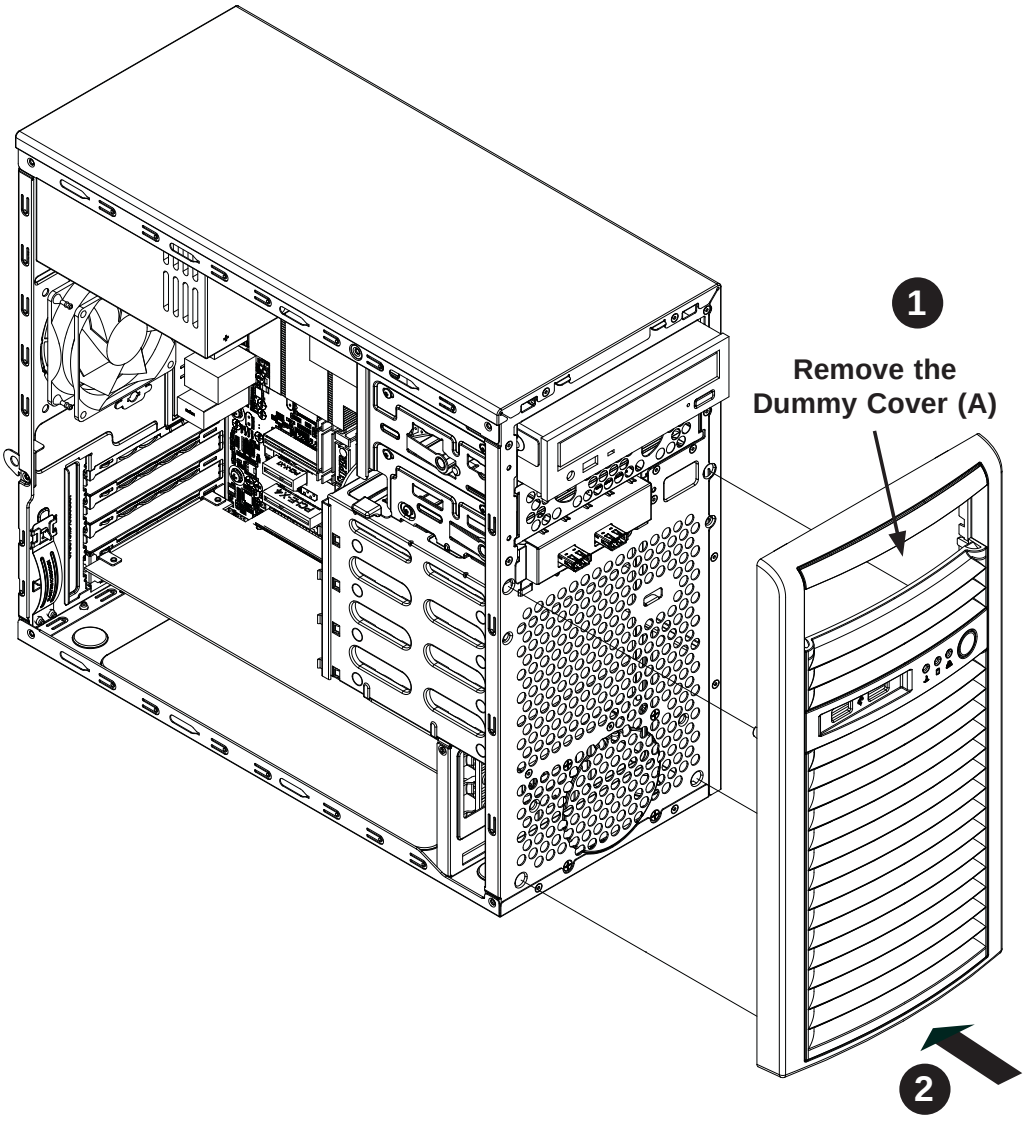


Figure 6-3: Installing the Front Bezel

6-4 Removing the Chassis Cover

The left side cover of the chassis must be removed before replacing the system fan or installing and removing hard drives.

Warning: Only qualified service technicians should access the inside of the system. Except for short periods of time, do NOT operate the system without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

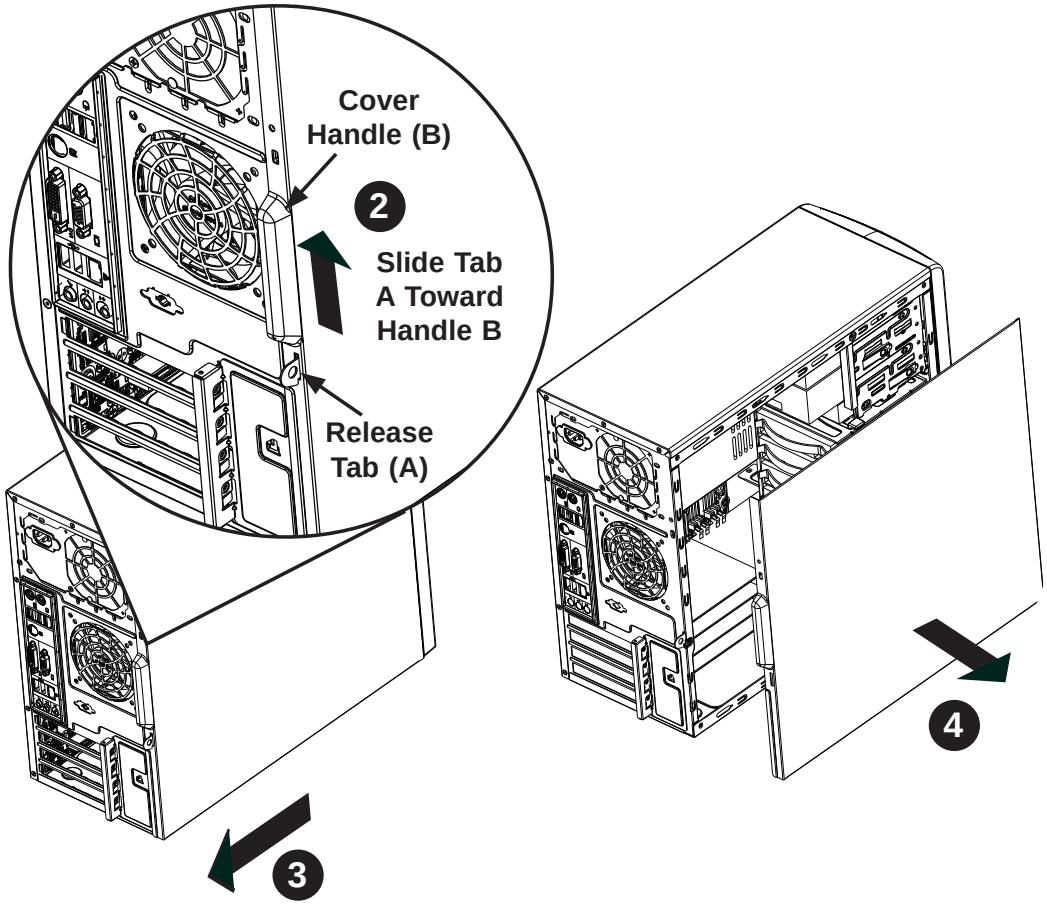


Figure 6-4: Removing the Chassis Cover

Removing the Chassis Cover:

1. Power down the server and disconnect it from the power source.
2. Slide the release tab (A) towards the cover handle (B).
3. Grasp the cover handle with your fingers and slide it toward the rear of the chassis
4. Remove the cover from the chassis.

6-5 System Fans

The SC731 includes a super quiet system fan that provides cooling for the chassis. No tools or screws are required to install the system fan.

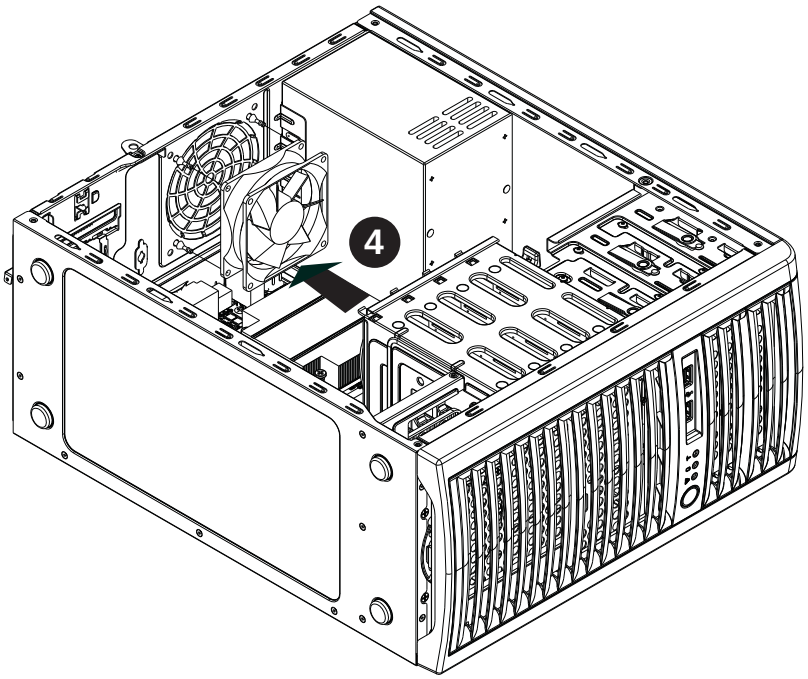
Fan Failure

Under normal operation, the chassis fan and the power supply fan both run continuously. If the chassis fan fails, the system must be powered down before replacing it. If the power supply fan fails, the power supply itself must be replaced.

Replacing the System Fan

1. Power down the server and disconnect it from the power source.
2. Remove the left chassis cover as described in Section 6-4.
3. Insert the four rubber pins into the four mounting holes surrounding the fan grill on the rear of the chassis.
4. Place the system fan on top of the fan grill, aligning the mounting holes of the fan grill with the mounting holes of the system fan.
5. Pull the rubber pins through the mounting holes of the system fan to secure the fan to the chassis.

Figure 6-5. Replacing the System Fan



6-6 Drive Bay Installation

The SC731 chassis must be powered-down before hard drives can be removed from the hard drive carriers, which are not hot-swappable.

SATA Drives

The SATA drive IDs are preconfigured as 0 through 3 in order from bottom to top. In order to access and install components in the chassis interior, it is necessary to rotate the hard drive cage. This will provide sufficient room to install and configure the chassis components. See Figures 6-6 and 6-7.

Rotating the Hard Drive Cage

1. Power down the server and disconnect it from the power source.
2. Remove the left chassis cover as described in Section 6-4.
3. Lift the release tab (A).
4. Rotate the hard disk drive cage (B) outward.

Removing and Installing Hard Drives

1. Rotate the hard drive cage as described above.
2. Press the release tab on the side of the hard drive carrier that is to be removed from the hard drive cage.
3. Gently slide the hard drive carrier out of the hard drive cage. See Figure 6-6.

Mounting a SATA Drive in a Drive Carrier

1. Insert a new hard drive into a hard drive carrier by sliding it towards the back of the the hard drive cage until it clicks into a locked position.
2. Connect the power and data cables to the hard drive.
3. Rotate the hard drive cage 90 degrees inward, returning it to the closed, operational position in the chassis.
4. If desired, each hard drive may be further secured to the drive cage with an additional (optional) screw at the middle of the drive.

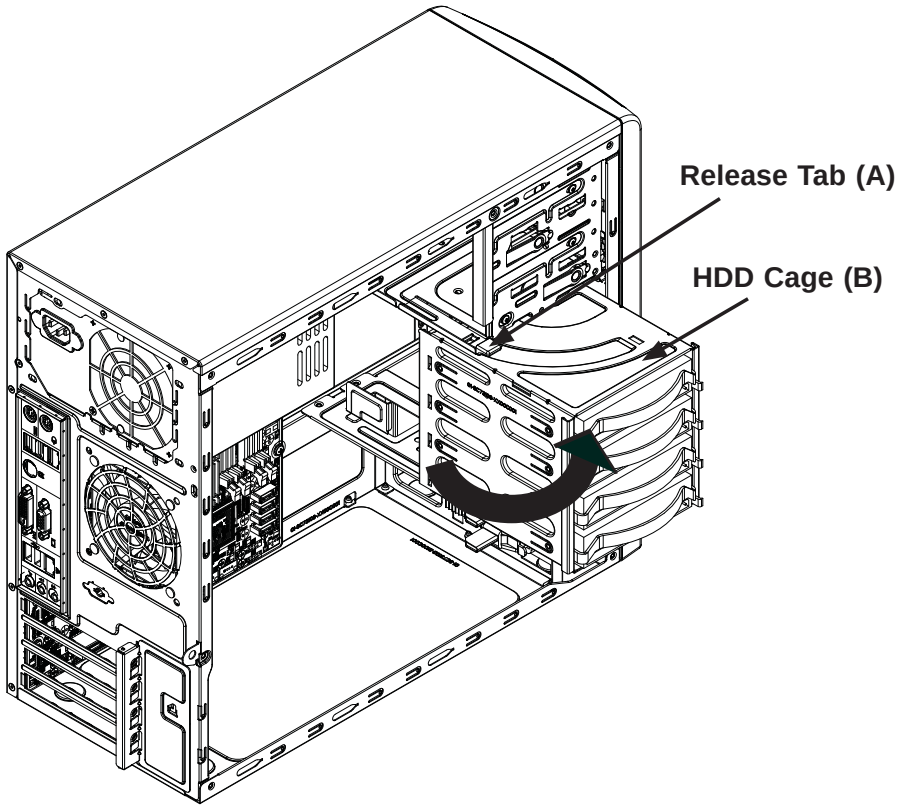


Figure 6-6: Rotating the Hard Drive Cage

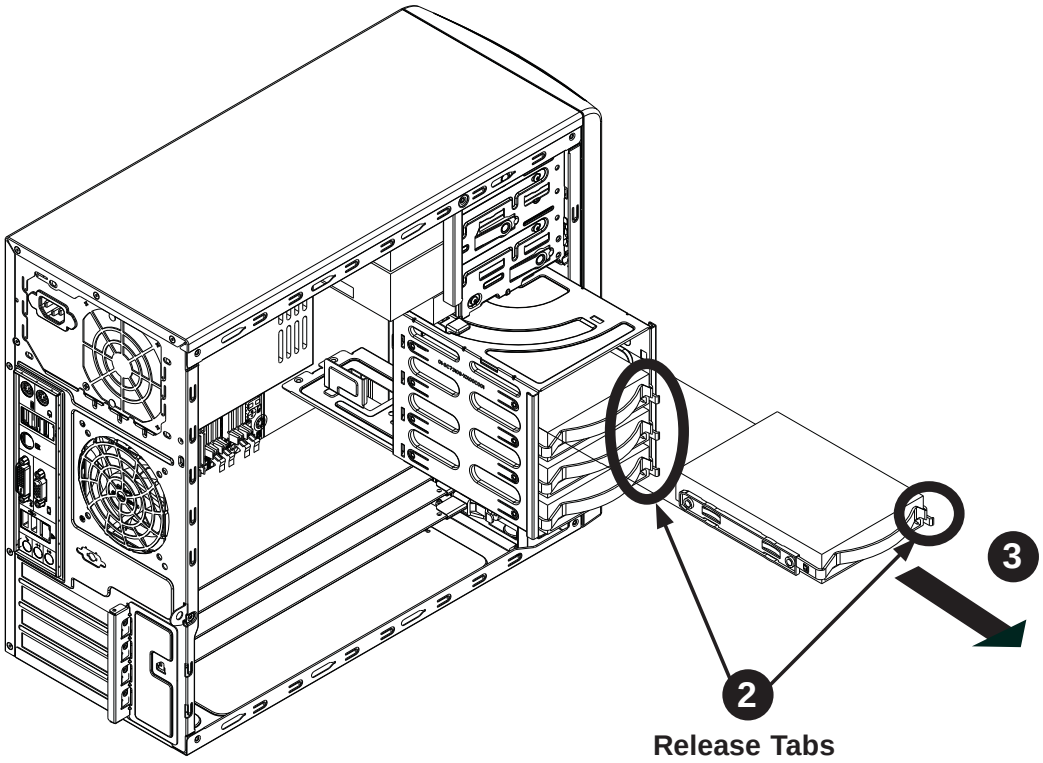


Figure 6-7: Removing a Hard Drive Carrier from the Hard Drive Cage

Installing Drives in the Optional Drive Bays

The SC731 chassis has two empty drive bays that support optional devices such as a DVD-ROM.

Installing an Optional Device

1. Power down the server and disconnect it from the power source.
2. Remove the front bezel from the chassis by lifting it upwards from the bottom, and pulling off the front of the chassis.
3. Remove the cover plate from the optical device slot on the front of the chassis.
4. Install the bracket rail (A) onto one side of the device by inserting the pins of the bracket into the mounting holes on the side of the device.
5. Slide the device into the chassis.
6. If desired, screws may be used to secure the device into chassis.
7. Attach the power and data cables to the drive.
8. Replace the chassis cover before restoring power to the system.

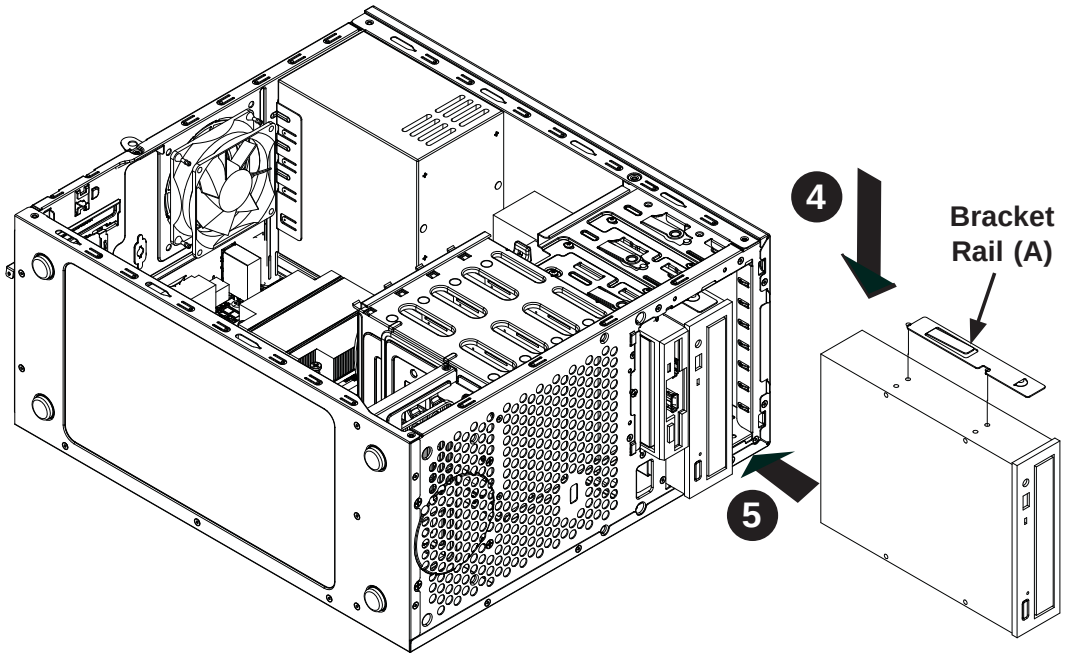


Figure 6-8: Installing an Optional Device

6-7 Power Supply

The SC731 chassis includes a 300-watt power supply. The power supply has the capability to automatically sense and operate with an input voltage of 100 or 240V AC.

If it becomes necessary to replace the power supply, follow the instructions below.

Replacing the Power Supply

1. Disconnect the chassis from any power source. Also disconnect all power cables that are connected to the motherboard.
2. Remove the screws securing the power supply to the chassis. These are located on the rear of the chassis. Set these screws aside for later use.
3. Gently lift the power supply out of the chassis.
4. Replace the failed power supply with an identical power supply model.
5. Secure the new power supply using the screws previously set aside.
6. Reconnect the power cables to the motherboard.
7. Plug the AC power cord back into the module and power up the server.
8. Finish by replacing the chassis left cover and then restoring power to the system.

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the X8SIL/X8SIL-F. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

Note: For instructions on BIOS recovery, please refer to the instruction guide posted at http://www.supermicro.com/support/manuals/.

Starting BIOS Setup Utility

To enter the AMI BIOS Setup Utility screens, press the <Delete> key while the system is booting up.

Note: In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.

Each main BIOS menu option is described in this manual. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (**Note**: the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.)

The AMI BIOS Setup Utility uses a key-based navigation system called "hot keys". Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, arrow keys, etc.

Note: Options printed in **Bold** are default settings.

How To Change the Configuration Data

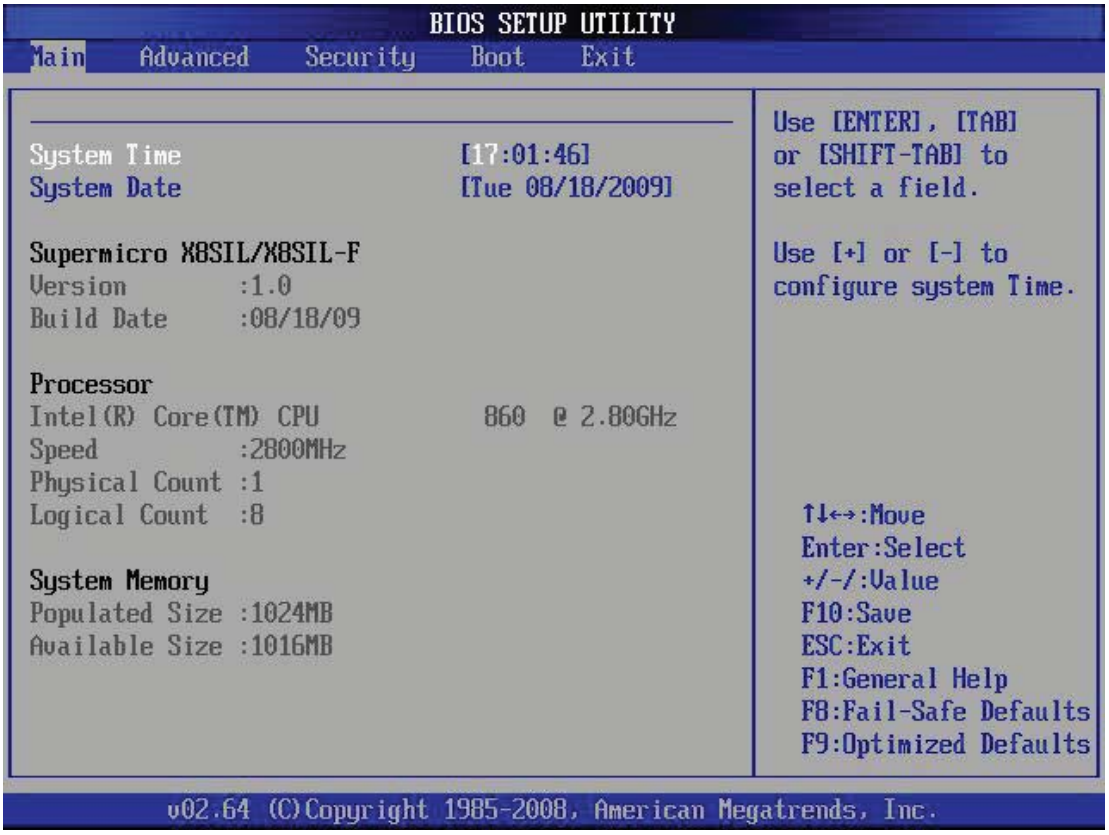
The configuration data that determines the system parameters may be changed by entering the AMI BIOS Setup utility. This Setup utility can be accessed by pressing <Del> at the appropriate time during system boot.

How to Start the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

Warning! Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating to avoid possible boot failure. Refer to our web site for BIOS recovery procedures < http://www.supermicro.com/support/manuals/ >.

7-2 Main Setup



When you first enter the AMI BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.

System Overview: The following BIOS information will be displayed:

System Time/System Date

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the arrow keys. Enter new values through the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in Day MM/DD/YY format. The time is entered in HH:MM:SS format. (**Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.)

Supermicro X8SIL/X8SIL-F

Version

Build Date

Processor

The AMI BIOS will automatically display the status of processor as shown below:

Type of Processor

Speed

Physical Count

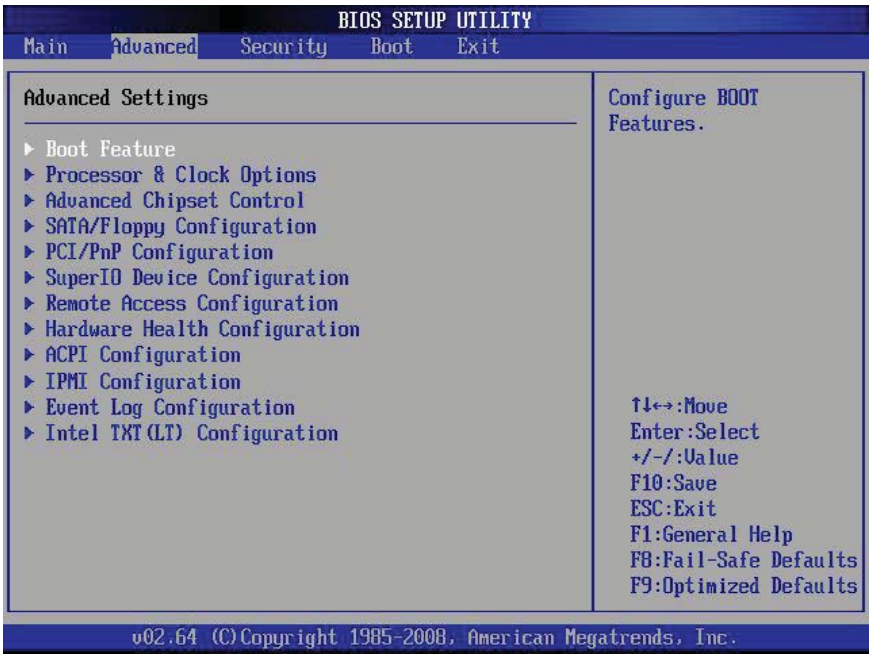
Logical Count

System Memory

This displays the size of memory available in the system:

7-3 Advanced Setup Configurations

Use the arrow keys to select Boot Setup and hit <Enter> to access the submenu items:



▶BOOT Feature

Quick Boot

If Enabled, this option will skip certain tests during POST to reduce the time needed for system boot. The options are **Enabled** and Disabled.

Quiet Boot

This option allows the bootup screen options to be modified between POST messages or the OEM logo. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

AddOn ROM Display Mode

This sets the display mode for Option ROM. The options are **Force BIOS** and Keep Current.

Bootup Num-Lock

This feature selects the Power-on state for Numlock key. The options are Off and **On**.

PS/2 Mouse Support

This feature enables support for the PS/2 mouse. The options are Disabled, Enabled and **Auto.**

Wait For 'F1' If Error

This forces the system to wait until the 'F1' key is pressed if an error occurs. The options are Disabled and **Enabled**.

Hit 'Del' Message Display

This feature displays "Press DEL to run Setup" during POST. The options are **Enabled** and Disabled.

Watch Dog Function

If enabled, the Watch Dog Timer will allow the system to reboot when it is inactive for more than 5 minutes. The options are Enabled and **Disabled.**

Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Power-Off for the system power to remain off after a power loss. Select Power-On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last state before a power loss. The options are Power-On, Power-Off and **Last State**.

Interrupt 19 Capture

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Enabled, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at boot and allow the drives that are attached to these host adaptors to function as bootable disks. If this item is set to Disabled, the ROM BIOS of the host adaptors will not capture Interrupt 19, and the drives attached to these adaptors will not function as bootable devices. The options are **Enabled** and Disabled.

▶Processor & Clock Options

Warning: Take Caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency or incorrect DRAM timing may cause system to become unstable. When this occurs, revert to the default setting.

CPU Ratio

This feature allows the user to use the CPU clock multiplier to multiply CPU speed in order to enhance performance. Select Manual to Manually set the multiplier setting. Select Auto for the BIOS to automatically select the CPU multiplier setting for your system. The options are **Auto** and Manual.

Clock Spread Spectrum

Select Enable to use the feature of Clock Spectrum, which will allow the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by

the components whenever needed. Select Disabled to enhance system stability. The options are **Disabled** and Enabled.

Hardware Prefetcher (Available when supported by the CPU)

If set to Enabled, the hardware pre fetcher will pre fetch streams of data and instructions from the main memory to the L2 cache in the forward or backward manner to improve CPU performance. The options are Disabled and **Enabled**.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if **Enabled**.

Intel® Virtualization Technology (Available when supported by the CPU)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are **Enabled** and Disabled. **Note**: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's web site for detailed information.

Execute-Disable Bit Capability (Available when supported by the OS and the CPU)

Set to Enabled to enable the Execute Disable Bit which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damage the system during an attack. The default is **Enabled**. (Refer to Intel and Microsoft Web Sites for more information.)

Simultaneous Multi-Threading (Available when supported by the CPU)

Set to Enabled to use the Hyper-Threading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled.**

Active Processor Cores

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are **All,** 1 and 2.

Intel® EIST Technology

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. **Please refer to Intel's web site for detailed information.** The options are Disable and **Enable**.

Intel® Turbo Boost Technology (Available if Intel® EIST technology is Enabled)

This feature allows processor cores to run faster than marked frequency in specific conditions. The options are Disabled and **Enabled.**

C1E Support

Select Enabled to use the "Enhanced Halt State" feature. C1E significantly reduces the CPU's power consumption by reducing the CPU's clock cycle and voltage during a "Halt State." The options are Disabled and **Enabled**.

Intel® C-STATE Tech

If enabled, C-State is set by the system automatically to either C2, C3 or C4 state. The options are Disabled and **Enabled**.

C-State package limit setting

If set to Auto, the AMI BIOS will automatically set the limit on the C-State package register. The options are **Auto**, C1, C3, C6 and C7.

C1 Auto Demotion

When enabled, the CPU will conditionally demote C3, C6 or C7 requests to C1 based on un-core auto-demote information. The options are Disabled and **Enabled.**

C3 Auto Demotion

When enabled, the CPU will conditionally demote C6 or C7 requests to C3 based on un-core auto-demote information. The options are Disabled and **Enabled.**

▶Advanced Chipset Control

The items included in the Advanced Settings submenu are listed below.

Memory Remap Feature

This feature when enabled, allows the remapping of everlapped PCI memory above the total physical memory. The settings are **Enabled** and Disabled.

Intel VT-d

Select Enabled to enable Intel's Virtualization Technology support for Direct I/O VT-d by reporting the I/O device assignments to VMM through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are Enabled and **Disabled**.

Active State Power Management

Select Enabled to start Active-State Power Management for signal transactions between L0 and L1 Links on the PCI Express Bus. This maximizes power-saving and transaction speed. The options are Enabled and **Disabled**.

Route Port 80h Cycles to

This feature allows the user to decide which bus to send debug information to. The options are Disabled, **PCI** and LPC.

USB Functions

This feature allows the user to decide the number of onboard USB ports to be enabled. The Options are: Disabled and **Enabled**.

Legacy USB Support (available if USB Functions above is Enabled)

Select Enabled to use Legacy USB devices. If this item is set to Auto, Legacy USB support will be automatically enabled if a legacy USB device is installed on the motherboard, and vise versa. The settings are Disabled, Enabled and **Auto**.

▶SATA / Floppy Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the IDE Devices and displays the following items:

Floppy A

This feature allows the user to select the type of floppy drive connected to the system. The options are Disabled, 360KB 5 1/4", 1.2MB 5 1/4", 720KB 3 1/2", **1.44MB 3 1/2"** and 2.88MB 3 1/2".

SATA#1 Configuration

If Compatible is selected, it sets SATA#1 to legacy compatibility mode, while selecting Enhanced sets SATA#1 to native SATA mode. The options are Disabled, Compatible, **Enhanced.**

Configure SATA as

This feature allows the user to select the drive type for SATA#1. The options are **IDE**, RAID, AHCI and Disabled.

ICH RAID CodeBase (Available if RAID is selected above)

Select Intel to enable the Intel SATA Host RAID Utility. Select Adaptec to use the Adaptec Host RAID Utility. The options are **Intel** and Adaptec.

SATA#2 Configuration (Available if IDE is enabled under "Configure SATA#1 as" above)

Selecting Enhanced will set SATA#2 to native SATA mode. The options are Compatible and **Enhanced**

IDE Detect Timeout (sec)

Use this feature to set the time-out value for the BIOS to detect the ATA, ATAPI devices installed in the system. The options are 0 (sec), 5, 10, 15, 20, 25, 30, and **35**.

Primary IDE Master/Slave, Secondary IDE Master/Slave, Third IDE Master, and Fourth IDE Master

These settings allow the user to set the parameters of Primary IDE Master/Slave, Secondary IDE Master/Slave, Third and Fourth IDE Master slots. Hit <Enter> to activate the following submenu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the submenu are:

Type

Select the type of device connected to the system. The options are Not Installed, **Auto**, CD/DVD and ARMD.

LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In the LBA mode, the maximum drive capacity is 137 GB. For drive capacities over 137 GB, your system must be equipped with a 48-bit LBA mode addressing. If not, contact your manufacturer or install an ATA/133 IDE controller card that supports 48-bit LBA mode. The options are Disabled and **Auto**.

Block (Multi-Sector Transfer)

Block Mode boosts the IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if Block Mode is not used. Block Mode allows transfers of up to 64 KB per interrupt. Select Disabled to allow data to be transferred from and to the device one sector at a time. Select Auto to allow data transfer from and to the device occur multiple sectors at a time if the device supports it. The options are **Auto** and Disabled.

PIO Mode

The IDE PIO (Programmable I/O) Mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The options are **Auto**, 0, 1, 2, 3, and 4.

Select Auto to allow the AMI BIOS to automatically detect the PIO mode. Use this value if the IDE disk drive support cannot be determined.

Select 0 to allow the AMI BIOS to use PIO mode 0. It has a data transfer rate of 3.3 MBs.

Select 1 to allow the AMI BIOS to use PIO mode 1. It has a data transfer rate of 5.2 MBs.

Select 2 to allow the AMI BIOS to use PIO mode 2. It has a data transfer rate of 8.3 MBs.

Select 3 to allow the AMI BIOS to use PIO mode 3. It has a data transfer rate of 11.1 MBs.

Select 4 to allow the AMI BIOS to use PIO mode 4. It has a data transfer bandwidth of 32-Bits. Select Enabled to enable 32-Bit data transfer.

DMA Mode

Select Auto to allow the BIOS to automatically detect IDE DMA mode when the IDE disk drive support cannot be determined.

Select SWDMA0 to allow the BIOS to use Single Word DMA mode 0. It has a data transfer rate of 2.1 MBs.

Select SWDMA1 to allow the BIOS to use Single Word DMA mode 1. It has a data transfer rate of 4.2 MBs.

Select SWDMA2 to allow the BIOS to use Single Word DMA mode 2. It has a data transfer rate of 8.3 MBs.

Select MWDMA0 to allow the BIOS to use Multi Word DMA mode 0. It has a data transfer rate of 4.2 MBs.

Select MWDMA1 to allow the BIOS to use Multi Word DMA mode 1. It has a data transfer rate of 13.3 MBs.

Select MWDMA2 to allow the BIOS to use Multi-Word DMA mode 2. It has a data transfer rate of 16.6 MBs.

Select UDMA0 to allow the BIOS to use Ultra DMA mode 0. It has a data transfer rate of 16.6 MBs. It has the same transfer rate as PIO mode 4 and Multi Word DMA mode 2.

Select UDMA1 to allow the BIOS to use Ultra DMA mode 1. It has a data transfer rate of 25 MBs.

Select UDMA2 to allow the BIOS to use Ultra DMA mode 2. It has a data transfer rate of 33.3 MBs.

Select UDMA3 to allow the BIOS to use Ultra DMA mode 3. It has a data transfer rate of 66.6 MBs.

Select UDMA4 to allow the BIOS to use Ultra DMA mode 4 . It has a data transfer rate of 100 MBs.

The options are **Auto**, SWDMAn, MWDMAn, and UDMAn.

S.M.A.R.T. For Hard disk drives

Self-Monitoring Analysis and Reporting Technology (SMART) can help predict impending drive failures. Select Auto to allow the AMI BIOS to automatically detect hard disk drive support. Select Disabled to prevent the AMI BIOS from using the S.M.A.R.T. Select Enabled to allow the AMI BIOS to use the S.M.A.R.T. to support hard drive disk. The options are Disabled, Enabled, and **Auto**.

32-Bit Data Transfer

Select Enable to enable the function of 32-bit IDE data transfer. The options are **Enabled** and Disabled.

▶PCI/PnP Configuration

This feature allows the user to set the PCI/PnP configurations for the following items:

Clear NVRAM

This feature clears the NVRAM during system boot. The options are **No** and Yes.

Plug & Play OS

Selecting Yes allows the OS to configure Plug & Play devices. (This is not required for system boot if your system has an OS that supports Plug & Play.) Select **No** to allow the AMI BIOS to configure all devices in the system.

PCI Latency Timer

This feature sets the latency Timer of each PCI device installed on a PCI bus. Select 64 to set the PCI latency to 64 PCI clock cycles. The options are 32, **64**, 96, 128, 160, 192, 224 and 248.

PCI IDE Bus Master

When enabled, the BIOS uses PCI bus mastering for reading/writing to IDE drives. The options are **Disabled** and Enabled.

PCIE I/O Performace

This feature selects the setting for the IOH PCIE maximum payload size. The options are **128B** and 256B**.**

PCI Slots 5, 6, 7 & PCI Slot 4 OPROM

Use this feature to enable or disable PCI slot Option ROMs. The options are Disabled and **Enabled.**

Onboard LAN Option ROM Select

This feature selects whether to load the iSCSI or PXE onboard LAN option ROM. The options are iSCSI and **PXE**.

Load Onboard LAN1 Option ROM/Load Onboard LAN2 Option ROM

This feature is to enable or disable the onboard option ROMs. The options are **Disabled** and Enabled.

Initiate Graphic Adapter

Use the feature to select the graphics controller to be used as the primary boot device. The options are Other and **Onboard VGA**.

▶Super IO Device Configuration

Serial Port1 Address/ Serial Port2 Address

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1 and Serial Port 2. Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port physically becomes unavailable. Select 3F8/IRQ4 to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address. The options for Serial Port1 are Disabled, **3F8/IRQ4**, 2E8/IRQ3. The options for Serial Port2 are Disabled, **2F8/IRQ3**, and 2E8/IRQ3.

Onboard Floppy Controller

Select Enabled to enable the onboard Floppy Controller. The options are **Enabled** and Disabled.

▶Remote Access Configuration

Remote Access

This allows the user to enable the Remote Access feature. The options are **Disabled** and Enabled.

If Remote Access is set to Enabled, the following items will display:

Serial Port Number

This feature allows the user decide which serial port to be used for Console Redirection. The options are **COM 1,** COM 2 and COM 3.

Note: Serial Over LAN (SOL) is enabled on COM 3 on the X8SIL-F.

Serial Port Mode

This feature allows the user to set the serial port mode for Console Redirection. The options are **115200 8, n 1**; 57600 8, n, 1; 38400 8, n, 1; 19200 8, n, 1; and 9600 8, n, 1.

Flow Control

This feature allows the user to set the flow control for Console Redirection. The options are **None**, Hardware, and Software.

Redirection After BIOS POST

Select Disabled to turn off Console Redirection after Power-On Self-Test (POST). Select Always to keep Console Redirection active all the time after POST. (Note: This setting may not be supported by some operating systems.) Select Boot Loader to keep Console Redirection active during POST and Boot Loader. The options are Disabled, Boot Loader, and **Always**.

Terminal Type

This feature allows the user to select the target terminal type for Console Redirection. The options are **ANSI**, VT100, and VT-UTF8.

VT-UTF8 Combo Key Support

A terminal keyboard definition that provides a way to send commands from a remote console. Available options are **Enabled** and Disabled.

Sredir Memory Display Delay

This feature defines the length of time in seconds to display memory information. The options are **No Delay,** Delay 1 Sec, Delay 2 Sec, and Delay 4 Sec.

▶Hardware Health Configuration

This feature allows the user to monitor Hardware Health of the system and review the status of each item when displayed.

CPU Overheat Alarm

This option allows the user to select the CPU Overheat Alarm setting which determines when the CPU OH alarm will be activated to provide warning of possible CPU overheat.

Warning: Any temperature that exceeds the CPU threshold temperature predefined by the CPU manufacturer may result in CPU overheat or system instability. When the CPU temperature reaches this predefined threshold, the CPU and system cooling fans will run at full speed.

The options are:

- The Early Alarm: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered as soon as the CPU temperature reaches the CPU overheat threshold as predefined by the CPU manufacturer.

- **The Default Alarm**: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered when the CPU temperature reaches about 5ºC above the threshold temperature as predefined by the CPU manufacturer to give the CPU and system fans additional time needed for CPU and system cooling. In both the alarms above, please take immediate action as shown below.

System Temperature

This feature displays the absolute system temperature (i.e., 34ºC).

CPU Temperature

The CPU Temperature feature will display the CPU temperature status as detected by the BIOS:

Low – This level is considered as the 'normal' operating state. The CPU temperature is well below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS (Fan Speed Control).

User intervention: No action required.

Medium – The processor is running warmer. This is a 'precautionary' level and generally means that there may be factors contributing to this condition, but the CPU is still within its normal operating state and below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS. The fans may adjust to a faster speed depending on the Fan Speed Control settings.

User intervention: No action is required. However, consider checking the CPU fans and the chassis ventilation for blockage.

High – The processor is running hot. This is a 'caution' level since the CPU's 'Temperature Tolerance' has been reached (or has been exceeded) and may activate an overheat alarm:

The Default Alarm – the Overheat LED and system buzzer will activate if the High condition continues for some time after it is reached. The CPU fan will run at full speed to bring the CPU temperature down. If the CPU temperature still increases even with the CPU fan running at full speed, the system buzzer will activate and the Overheat LED will turn on.

The Early Alarm – the Overheat LED and system buzzer will be activated exactly when the High level is reached. The CPU fan will run at full speed to bring the CPU temperature down.

Note: In both the alarms above, please take immediate action as shown below. See CPU Overheat Alarm to modify the above alarm settings.

User intervention: If the system buzzer and Overheat LED has activated, take action immediately by checking the system fans, chassis ventilation and room temperature to correct any problems. Note: the system may shut down if it continues for a long period to prevent damage to the CPU.

Notes: The CPU thermal technology that reports absolute temperatures (Celsius/Fahrenheit) has been upgraded to a more advanced feature by Intel in its newer processors. The basic concept is that each CPU is embedded by a unique temperature information that the motherboard can read. This 'Temperature Threshold' or 'Temperature Tolerance' has been assigned at the factory and is the baseline by which the motherboard takes action during different CPU temperature conditions (i.e., by increasing CPU Fan speed, triggering the Overheat Alarm, etc). Since CPUs can have different 'Temperature Tolerances', the installed CPU can now send its 'Temperature Tolerance' to the motherboard resulting in better CPU thermal management.

Supermicro has leveraged this feature by assigning a temperature status to certain thermal conditions in the processor (Low, Medium and High). This makes it easier for the user to understand the CPU's temperature status, rather than by just simply seeing a temperature reading (i.e., 25^{o}C).

The information provided above is for your reference only. For more information on thermal management, please refer to Intel's Web site at www.Intel.com.

Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the

CPU on-die temperature increases, the fan speed will also increase, and vice versa. Select Workstation if your system is used as a Workstation. Select Server if your system is used as a Server. Select “Disabled, (Full Speed @12V)” to disable the fan speed control function and allow the onboard fans to constantly run at the full speed (12V). The Options are: **Disabled**, 4-pin (Server), and 4-pin (Workstation).

Fan1 ~ Fan 6 Reading

This feature displays the fan speed readings from fan interfaces Fan1 through Fan5.

Vcore, AVCC, 3.3Vcc, 12V, V_DIMM, 5V, -12V, 3.3Vsb, and Vbat

▶ACPI Configuration

Use this feature to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.

High Performance Event Timer

Select Enabled to activate the High Performance Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

ACPI Aware O/S

Enable ACPI support if it is supported by the OS to control ACPI through the Operating System. Otherwise, disable this feature. The options are **Yes** and No.

ACPI APIC Support

Select Enabled to include the ACPI APIC Table Pointer in the RSDT (Root System Description Table) pointer list. The options are **Enabled** and Disabled.

APIC ACPI SCI IRQ

When this item is set to Enabled, APIC ACPI SCI IRQ is supported by the system. The options are Enabled and **Disabled**.

Headless Mode

This feature is used to enable the system to function without a keyboard, monitor or mouse attached The options are Enabled and **Disabled**.

ACPI Version Features

The options are ACPI v1.0, **ACPI v2.0** and ACPI v3.0. Please refer to ACPI's website for further explanation: http://www.acpi.info/

▶IPMI Configuration (X8SIL-F Only)

Intelligent Platform Management Interface (IPMI) is a set of common interfaces that IT administrators can use to monitor system health and to manage the system as a whole. For more information on the IPMI specifications, please visit Intel's website at www.intel.com.

IPMI Firmware Revision

This item displays the current IPMI firmware revision.

Status of BMC

Baseboard Management Controller (BMC) manages the interface between system management software and platform hardware. This is an informational feature which returns the status code of the BMC micro controller.

View BMC System Event Log

This feature is used to view any BMC events. It shows the total number of entries and will allow the viewing of each event by scrolling down on an Entry Number and pressing Enter.

Clear BMC System Event Log

This feature is used to clear the System Event Log. Caution: Any cleared information is unrecoverable. Make absolutely sure you no longer need any data stored in the log before clearing the BMC Event Log.

Set LAN Configuration

Set this feature to configure the IPMI LAN adapter with a network address.

Channel Number - Enter the channel number for the SET LAN Config command. This is initially set to **[1]**. Press "+" or "-" on your keyboard to change the Channel Number.

Channel Number Status - This feature returns the channel status for the Channel Number selected above: "Channel Number is OK" or "Wrong Channel Number".

IP Address Source - This feature selects whether the IP address, Subnet Mask and Gateway Address are automatically assigned by the network's DHCP server (Dynamic Host and Configuration Protocol) or manually entered by the user (Static). If Static is selected, the IP Address, Subnet Mask and Gateway Address must be manually entered below. The options are Static and **DHCP**.

IP Address - Enter the IP address for this machine. This should be in decimal and in dotted quad form (i.e., 192.168.10.253). The value of each three-digit number separated by dots should not exceed 255.

Subnet Mask - Subnet masks tell the network which subnet this machine belongs to. The value of each three-digit number separated by dots should not exceed 255.

Gateway Address - Enter the Gateway address this machine will use (i.e., 192.168.10.1).

MAC Address - The BIOS will automatically enter the MAC address of this machine, however it may be over-ridden. MAC addresses are 6 two-digit hexadecimal numbers (Base 16, 0 ~ 9, A, B, C, D, E, F) separated by dots. (i.e., 00.30.48.D0.D4.60)

BMC Watch Dog Timer Action

Allows the BMC to reset or power down the system if the operating system hangs or crashes. The options are **Disabled**, Reset System, Power Down, Power Cycle.

BMC WatchDog TimeOut [Min:Sec]

This option appears if BMC Watch Dog Timer Action (above) is enabled. This is a timed delay in minutes or seconds, before a system power down or reset after an operating system failure is detected. The options are **[5 Min]**, [1 Min], [30 Sec], and [10 Sec].

▶Event Log Configuration

View Event Log

Use this option to view the System Event Log.

Mark all events as read

This option marks all events as read. The options are OK and Cancel.

Clear event log

This option clears the Event Log memory of all messages. The options are OK and **Cancel.**

▶Intel® TXT (LT) Configuration

Intel TXT Initialization

Intel TXT (Trusted Execution Technology) helps protect against software-based attacks and ensures protection, confidentiality and integrity of data stored or created

on the system. The options are Enabled and **Disabled.** When enabled the following information are displayed along with their status.:

BIOS AS [SCLEAN]

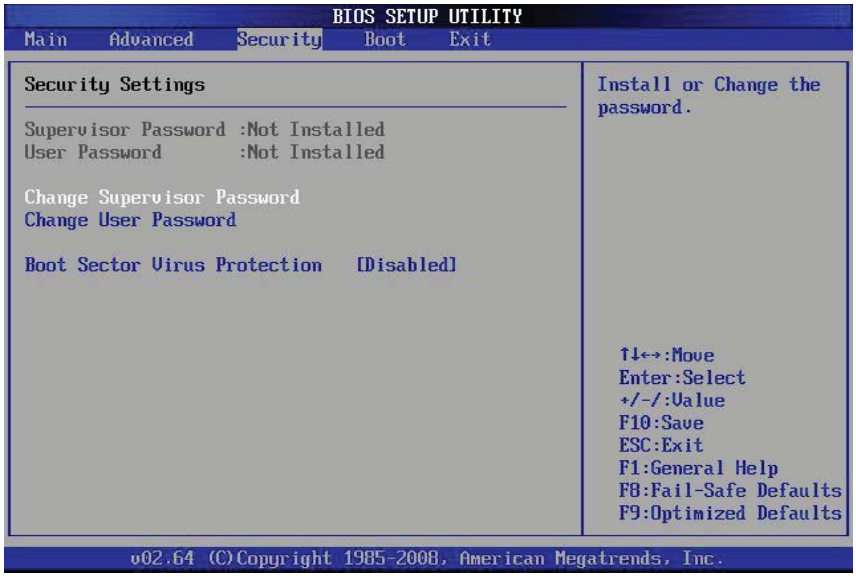
BIOS AC [SCHECK]

Lock DPR

Reset TPM Establishment Flag

7-4 Security Settings

The AMI BIOS provides a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.



Supervisor Password

This item indicates if a supervisor password has been entered for the system. Clear means such a password has not been used and Set means a supervisor password has been entered for the system.

User Password:

This item indicates if a user password has been entered for the system. Clear means such a password has not been used and Set means a user password has been entered for the system.

Change Supervisor Password

Select this feature and press <Enter> to access the submenu, and then type in a new Supervisor Password.

User Access Level (Available when Supervisor Password is set as above)

Available options are **Full Access**: grants full User read and write access to the Setup Utility, View Only: allows access to the Setup Utility but the fields cannot be changed, Limited: allows only limited fields to be changed such as Date and Time, No Access: prevents User access to the Setup Utility.

Change User Password

Select this feature and press <Enter> to access the submenu , and then type in a new User Password.

Clear User Password (Available only if User Password has been set)

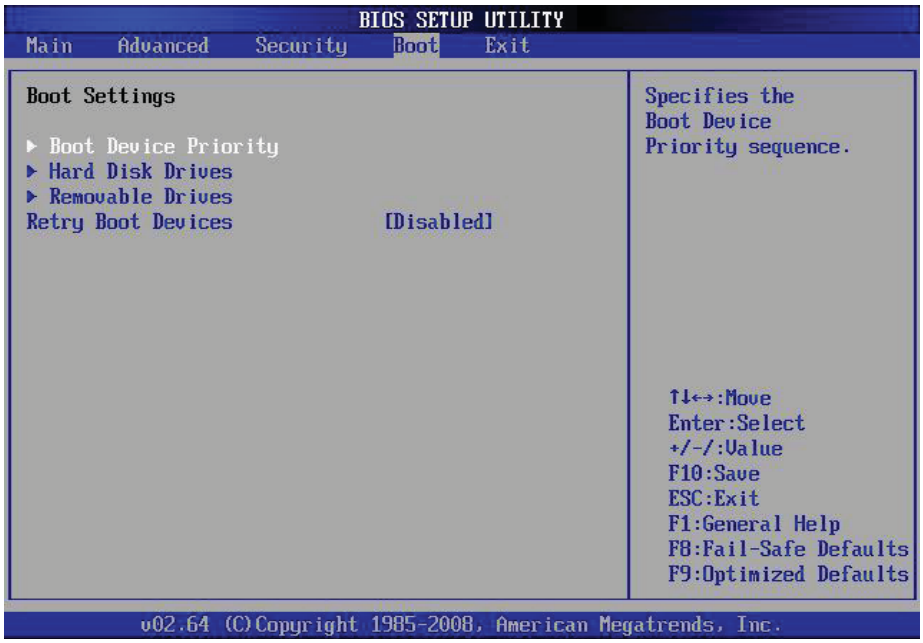
Password Check

Available options are **Setup** and Always.

Boot Sector Virus Protection

When Enabled, the AMI BOIS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are Enabled and **Disabled**.

7-5 Boot Settings



Use this feature to configure Boot Settings:

▶Boot Device Priority

This feature allows the user to specify the sequence of priority for the Boot Device. The settings are 1st boot device, 2nd boot device, 3rd boot device, 4th boot device, 5th boot device and Disabled.

- 1st Boot Device - 1st Floppy Drive
- 2nd Boot Device - [USB: XXXXXXXXX]
- 3rd Boot Device - [SATA: XXXXXXXXX]
- 4th Boot Device - [Network: XXXXXXXXX]
- 5th Boot Device - [Network: XXXXXXXXX]

▶Removable Drives

This feature allows the user to specify the boot sequence from available Removable Drives. The settings are 1st boot device, 2nd boot device, and Disabled.

- 1st Drive
- 2nd Drive - [USB: XXXXXXXXX]

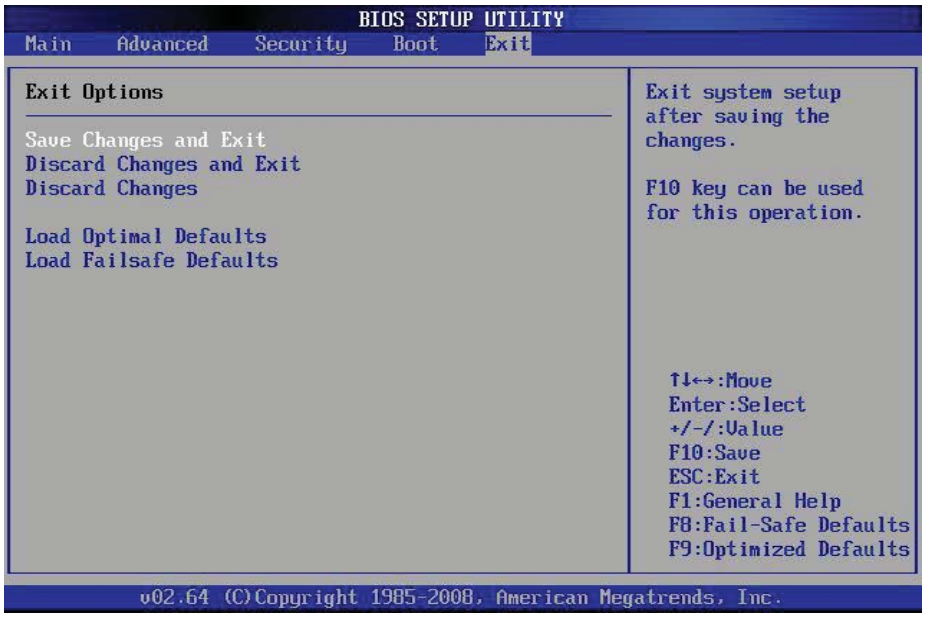
Retry Boot Devices

Select this option to retry booting from the configured boot devices if the systems fail to boot initially. The options are **Disabled** and Enabled.

▶CD/DVD Drives

This feature allows the user to specify the boot sequence from available CD/DVD Drives (i.e., 1st Drive, 2nd Drive, etc).

7-6 Exit Options



Select the Exit tab from the AMI BIOS Setup Utility screen to enter the Exit BIOS Setup screen.

Save Changes and Exit

When you have completed the system configuration changes, select this option to leave the BIOS Setup Utility and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to the AMI BIOS Utility Program.

Load Optimal Defaults

To set this feature, select Load Optimal Defaults from the Exit menu and press <Enter>. Then, select OK to allow the AMI BIOS to automatically load Optimal Defaults to the BIOS Settings. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications.

Load Fail-Safe Defaults

To set this feature, select Load Fail-Safe Defaults from the Exit menu and press <Enter>. The Fail-Safe settings are designed for maximum system stability, but not for maximum performance.

Notes

Appendix A

POST Error Beep Codes

This section lists POST (Power On Self Test) error beep codes for the AMI BIOS. POST error beep codes are divided into two categories: recoverable and terminal. This section lists Beep Codes for recoverable POST errors.

Recoverable POST Error Beep Codes

When a recoverable type of error occurs during POST, BIOS will display a POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and eight short beeps - video configuration error

1 repetitive long beep - no memory detected

1 continuous beep with the front panel Overheat LED on - system overheat

Notes

Appendix B

Installing Windows

After all hardware components have been installed, you must first configure Intel South Bridge RAID Settings before you install the Windows OS and other software drivers. To configure RAID settings, please refer to RAID Configuration User Guides posted on our web site at www.supermicro.com/support/manuals.

Note: The following OS installation instructions are written for the Windows XP/2003 OS only. If you have the Windows 2008 or Windows Vista OS, please follow the instructions displayed on your screen to install the OS.

B-1 Installing Windows to a RAID System

1. Insert Microsoft's Windows XP/Windows 2003 Setup CD in the CD-ROM drive and the system will start booting up from the CD.

2. Press the <F6> key when the message "Press F6 if you need to install a third party SCSI or RAID driver" displays.

3. When the Windows XP/Windows 2003 Setup screen appears, press "S" to specify additional device(s).

4. Insert the driver diskette "Intel AA RAID XP/2003 Driver for ICH10R" into Drive A: and press the <Enter> key.

5. Choose the Intel(R) ICH10R *SATA RAID Controller* from the list indicated in the XP/2003 Setup Screen and press the <Enter> key.

6. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

7. From the Windows XP/Windows 2003 Setup screen, press the <Enter> key. The XP/2003 Setup will automatically load all device files and then, continue the Windows XP/Windows 2003 installation.

8. After the Windows XP/Windows 2003 OS Installation has completed, the system will automatically reboot.

B-2 Installing Windows to a Non-RAID System

1. Insert Microsoft's Windows OS Setup CD in the CD-ROM drive and the system will start booting up from the CD.

2. Continue with the installation. The Windows OS Setup screen will display.

3. From the Windows OS Setup screen, press the <Enter> key. The OS Setup will automatically load all device files and then continue with the Windows installation.

4. After the installation has completed, the system will automatically reboot.

5. Insert the Supermicro Setup CD that came with your system into the CD-ROM drive during system boot and the main screen will display.

Appendix C

System Specifications

Processors
One Intel® 3400 series processor in an LGA1156 socket

Note: Please refer to our web site for a complete listing of supported processors.

Chipset
Intel 3400 (X8SIL) / Intel 3420 (X8SIL-F)

BIOS
8 Mb AMI® BIOS

Memory Capacity
Four DIMM slots supporting up to 16 GB of UDIMM (unbuffered DIMMs) or up to 32 GB or RDIMM (registered DIMMs) DDR3-1333/1066/800 memory

Note: See the memory section in Chapter 5 for details.

SATA Controller
Intel on-chip controller for 3 Gb/s Serial ATA, RAID 0, 1, 5 and 10 supported (10 supported with Windows OS only)

Drive Bays
Four (4) internal drive bays to house four (4) standard SATA drives

Expansion Slots
Supports the use of four standard size PCI add-on cards: two PCI-Express 2.0 x8, one PCI-Express 2.0 x4 (in a x8 slot) and one 32-bit PCI 33 MHz

Serverboard
5036I-I: X8SIL (microATX form factor)
Dimensions: 9.6" x 9.6" (244 x 244 mm)
5036I-IF: X8SIL-F (microATX form factor)
Dimensions: 9.6" x 9.6" (244 x 244 mm)

Chassis
SC731i-300B (Mini-tower)
Dimensions: (WxHxD) 7.25 x 14.25 x 16.75 in. (184 x 362 x 425 mm)

Weight
Gross (Bare Bone): 16 lbs. (7.26 kg.)

System Cooling
One whisper-quiet 9-cm exhaust fan

System Input Requirements
AC Input Voltage: 100-240 VAC
Rated Input Current: 6A (115V) to 3A (240V)
Rated Input Frequency: 50/60 Hz

Power Supply
Rated Output Power: 300W (Part# PWS-303-PQ)
Rated Output Voltages: +3.3V (16A), +5V (19A), +12V (11A), -12V (0.15A), +5Vsb (2A)

Operating Environment
Operating Temperature: 10º to 35º C (50º to 95º F)
Non-Operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-Operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance
Electromagnetic Emissions: FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. “Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate”

Notes

(continued from front)

The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.